APPENDIX E

LETTER OF LEROY E. EDWARDS, IMPERIAL IRRIGATION DISTRICT, MAY 12, 1981

(Exhibits D and E referred to in the letter are on file
in the Southern District Office of the
Department of Water Resources)

IMPERIAL IRRIGATION DISTRICT

EXECUTIVE OFFICE • 1284 MAIN STREET • P O BOX 1809 • EL CENTRO CALIFORNIA 92244

May 12, 1981

Mr. Ronald B. Robie, Director
Department of Water Resources
P. O. Box 388
Sacramento, CA 95814

Dear Mr. Robie:

This will acknowledge receipt and make reference to the Department of Water Resources' letter dated April 10, 1981, regarding the "Investigation of John J. Elmore Allegations of Misuse of Water by Imperial Irrigation District" received April 13 and acknowledged officially on April 14 by the Board of Directors of Imperial Irrigation District.

According to the record, Mr. Elmore's application was filed with the Department of Water Resources on June 17, 1980, and the Preliminary Report submitted by the Department of Water Resources to Imperial Irrigation District was issued on April 10, 1981--10 months later--with the request that Imperial Irrigation District answer the same within three weeks.

Imperial Irrigation District prepared a letter dated November 13, 1980, including exhibits, which addressed the allegations made by John J. Elmore in his petition filed with the Department of Water Resources alleging the misuse of water by Imperial Irrigation District. This letter was not included in the Preliminary Report, and it is the desire of Imperial Irrigation District to set forth the contents of said letter in its entirety as follows:

> "This will acknowledge receipt and make reference to your letter dated October 24, 1980 and the contents contained therein.
>
> "As concerns the allegations made by John J. Elmore that Imperial Irrigation District; i.e., the public agency itself, is practicing wasteful water management and marketing practices in the operation of the water division of this district is simply not so.
>
> "First of all, I think it is important to take into consideration the fact that the District diverts water

at Imperial Dam, approximately 60 miles from the system. The quantity ordered at Imperial Dam is released from Parker Dam, some 160 miles upstream, for there is no storage at Imperial Dam. (See Exhibit A attached hereto and made a part hereof). The operating criteria under which the District performs requires that Imperial Irrigation District place its orders for water on each Wednesday for deliveries to the farmer commencing on Monday through Sunday. Or to put it another way, the District in essence is anticipating what the farmers will require for their operation as much as 11 days in advance, notwithstanding the vagaries of weather such as wind, rain, humidity, or any other variable.

"Furthermore, the District does not dictate to the farmer as concerns the quantity of water ordered. This decision rests solely with the farmer and not with Imperial Irrigation District. If the farmer orders 10 second-feet for 24 hours and only uses 8 second-feet, obviously, the 2 remaining second-feet which cannot be used for a period of time is returned to the District's system.

"While Mr. Elmore alleges that Imperial Irrigation District is diverting canal water to the Salton Sea, the fact of the matter is that the water which finds its way to Salton Sea through the lateral system is water which has been returned unused to the District (often without authorization) by the farmer who has ordered more water than he needs to irrigate his land. While the same is wet water and finds its way to the sea, in actuality it is water which was paid for but not used by the person who ordered the same. This has been a common practice throughout the District's system in recent years.

"The District has tried continuously to encourage the water users to order only water actually needed to irrigate the land properly and not waste the same and/or return any overage to the District's system for there simply is no storage in the District's canal system for this purpose.

"The District, as you well know, has no police power by way of any statute or otherwise so, consequently, when the District seeks to encourage the farmer to use the water wisely and prudently and not waste the same, the task of this undertaking becomes increasingly difficult, if not impossible, for there is no remedy available to us.

"Dealing with the matter of the exhibits to which Mr. Elmore has referred and on which he relies to support

his position--Exhibits 1, 2 and 3--the findings those reports make which deal with the matter of concrete lining are not only outdated in a rather marked way but do not take into consideration the fact that Imperial Irrigation District has over half of its canal system already concrete lined; all of its regulating structures are in concrete form, including the deliveries which make the diversions possible from the canal system, which required replacement of 5,000 wooden structures in the latter years without governmental assistance of any nature whatsoever. The Department of the Interior, Bureau of Reclamation, has made the statement that they know of no other district in the western hemisphere which has made the progress this district has made in the field of concrete lining.

"Laser beam leveling is not new to this area. As a matter of fact, it has been practiced from time to time but dead-level type design for the types of soils in this area is not a practical solution, in our opinion.

"Leaching and the quantity of water applied to accomplish the objective, as we understand under the formula used, is very, very low compared to other standards in other states. The Colorado River Board of California indicates that the District's application by formula is too low and the figures should be increased to show a more realistic quantity of applied water to the soil profile.

"Dealing with the matter of employing pump-back systems and sprinkler-soaker type irrigation and the lack thereof, according to the report, simply does not tell it like it is. Many of the farmers have gone sprinkler irrigation and have invested large sums of money in doing so. Pump-back systems, in our judgment, are an obligation and concern of the water user and not Imperial Irrigation District, for if the farmer desires to return his tail water--which on many ocassions is interlaced with nitrate, phosphate, and ammonia, fertilizers, herbicides and other undesirable elements--to the operator's head ditch is acceptable but unacceptable to introduce the same into the District's canal system for the sake of creating a reservoir, for the contaminated water cannot be permitted to enter into the District's canal system simply because the Health and Safety Code prohibits this practice, for the same is used for domestic and industrial purposes.

"There are many discrepancies in the statement made based on today's facts. For one, the bulletin recites that water is being sold for $3.00 an acre-foot, when in

reality the charges being assessed today by the District are $6.50 an acre-foot. This is not the only expense the farmer is obligated to pay. He is also required to tile the ground he farms to cope with the high salinity index of the water he receives, for Imperial Irrigation District is located on the tail end of the Colorado River system which necessitates the District to accept all return flow from upstream users, as the Colorado River is the sole and only source of water available to the District.

"The affidavit submitted by William S. Gookin, Consulting Engineer, to which Mr. Elmore refers as Exhibit 3 and upon which he relies, is difficult at best to accept when one compares the document submitted in opposition thereto by Maurice N. Langley, a former long time employee of the U. S. Department of the Interior, Bureau of Reclamation, and a professional Agricultural Engineer in California and Wyoming; a registered Civil Engineer in the District of Columbia; and certified by the American Registry of Certified Professional in Agronomy, Crops and Soils as a Professional Agronomist and Soil Scientist. His resume is attached hereto in affidavit form. Mr. Langley is presently vice president of Bookman-Edmonston, a water engineering firm dealing with water and water related matters which I think is very well known to those who operate in the west and who are interested in water agricultural problems in the State of California. (Exhibit B)

"Also attached hereto and made a part hereof for the purpose of the record is an affidavit executed by J. Robert Wilson. (Exhibit C)

"One other point that we think is important to make reference to is the fact that Mr. Gookin in determining his findings uses 9 sump pumps for his factoring to develop the quality of water, when in reality the District, as of November 1, 1979, was operating 454 like sump pumps in the valley floor and 30 such pumps which surround Salton Sea. The State should review and study this issue, for we believe the affidavit on its face, taking into consideration the information submitted therein, leaves much to be desired."

Exhibits "A", "B" and "C" referred to above are attached.

In addition to the aforementioned information, we wish to submit the following comments regarding the Preliminary Report.

1. The District has no difficulty in agreeing with the concept of lining the All-American Canal to save water. However, we ave difficulty in understanding the correlation between lining ne All-American Canal and the level of Salton Sea. This inference may not be intended, but we would like to call this fact to ur attention.

2. The Report suggests that an overall average reduction of)% in water applied for evapotranspiration could save 160,000 :re-feet of water annually. This statement, however, does not ake into consideration the following facts:

(a) The District is on the tail end of the system, thereby receiving the worst quality of water the River can deliver;

(b) There is no other source of water available to the District; and

(c) A real concern on the part of the District is that the quality of the water that the District will receive in the future will be more saline than the water received today.

3. The conclusion of the report that "The actual flow rate regulated by the degree of opening of the gates and is not rectly dependent on the depth of water in the canal...." is ly correct in its limited application where the water level in e lateral canal system can be reduced. However, in many inances in concrete lined sections, this opportunity is not afforded cause the natural surface of the land served by the canal is xed at a point which would not permit gravity flow with reduced nal water surface elevation. Exhibit "D" (3 pages), attached, s been prepared by the District's engineering section to subantiate this conclusion.

4. The pictures following Appendix "E" and page E-1 were)parently furnished by the law firm of Sutherland & Gerber who presented the plaintiffs in Salton Bay Marina, Inc., et al, v. perial Irrigation District. Following the pictures is a tabution captioned "Rose Canal Spill" which indicates a contribuon by the Rose Spill of 3,873.6 acre-feet for 1980. These hibits were apparently included in the Report to show excess illage from the Rose System which empties into the Alamo River d ultimately finds its way to Salton Sea.

place the matter in proper perspective one must consider the t that six canals are accommodated by the Rose Spill facility. es: canals are the Rose, Alamitos, Acacia, Dogwood, South Date, e North Date.

The water received at the headings of these canals is reflected on Exhibit "E", attached, prepared by the District's engineering section. The aggregate quantity of water passing the heading of these canals is, in round figures, 196,600 acre-feet for the period January through December, 1980. As indicated on Exhibit "E", spillage at the Rose Spill was 3,980 acre-feet for the same period, or a spill factor of 2%. A contribution of 2% is acknowledged as a very low figure.

5. The Colorado River Board of California, at the invitation of the Department of Water Resources, prepared comments to subject Preliminary Report. Imperial Irrigation District supports the recommendations and conclusions contained in the response filed by the Colorado River Board. The District desires to re-emphasize the importance of the position stated by the Colorado River Board that a study should be undertaken to determine the relationship of all components contributing to the increase in the elevation of Salton Sea. This, of course, should include the severe storms experienced between 1975 and 1980 and take into consideration others who make contributions to this body of water.

6. The Board of Directors of Imperial Irrigation District is comprised of five members, not seven.

7. Finally, Imperial Irrigation District initiated a water conservation program in 1965. This program was amended by specific action by the Board of Directors on July 1, 1976 and July 1, 1980. Copies of these Board actions are included in the Report. In addition, the Board has adopted Resolution No. 26-81 which is attached as Exhibit "F". This action further implements conservation plans and practices heretofore approved.

It will be appreciated if the comments made herein are considered in finalizing your Report.

Sincerely yours,

LEROY E. EDWARDS, President
Board of Directors

Attachments
(Exhibits "A" through "F")

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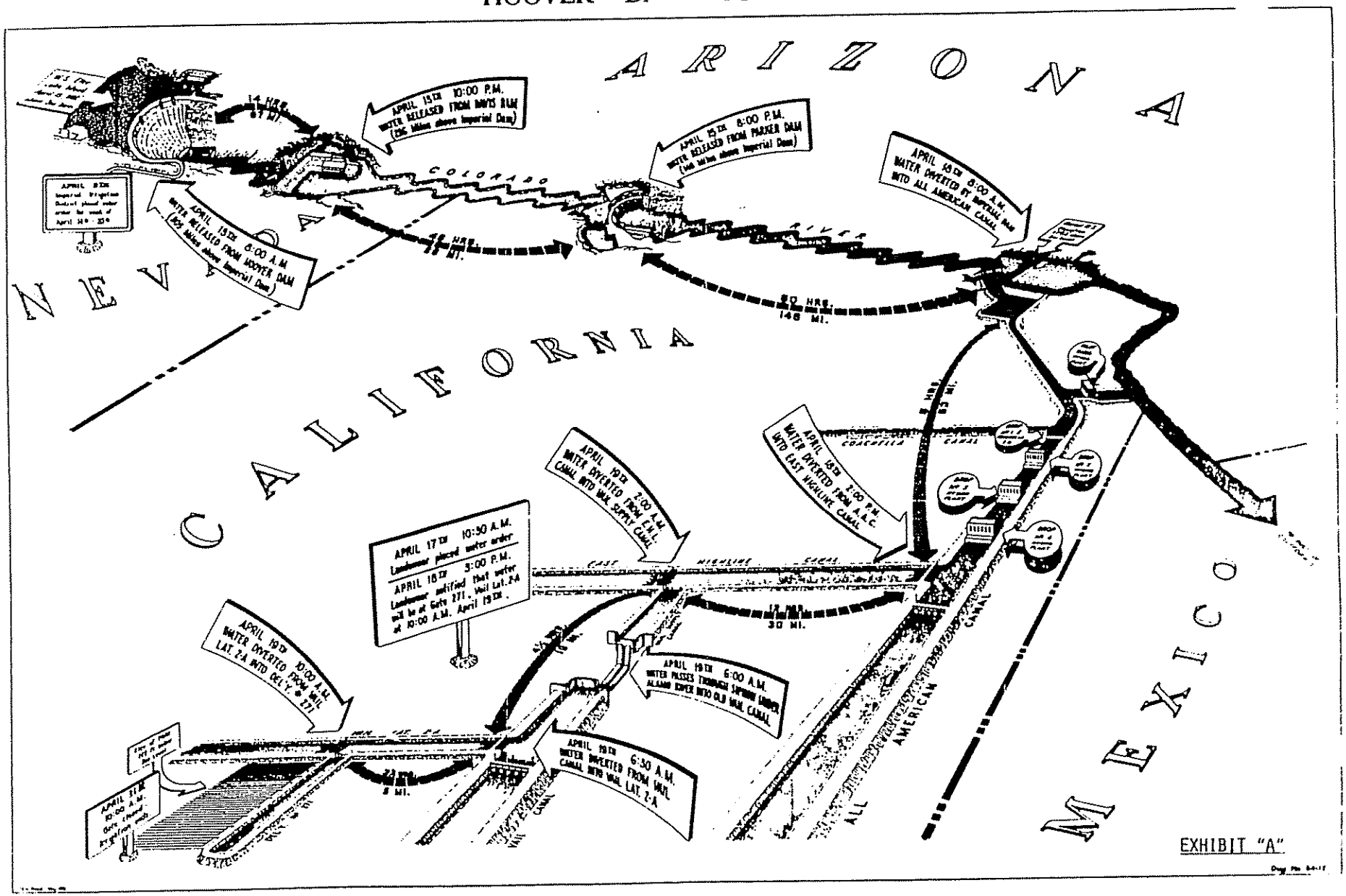


[illegible] & [illegible]
Attorneys at Law
895 Broadway
El Centro, California 92243
Telephone: 714 352-2821

Attorneys for Defendant,
IMPERIAL IRRIGATION DISTRICT

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

SALTON BAY MARINA, et al., Plaintiffs, vs. IMPERIAL IRRIGATION DISTRICT, et al., Defendants.	Civil Action No. 76-1095-T AFFIDAVIT OF MAURICE N. LANG IN OPPOSITION TO PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION

1. I am a registered Professional Agricultural Engineer i California and Wyoming; a registered Civil Engineer in the District of Columbia; and certified by the American Registry of Certified Professional in Agronomy, Crops and Soils as a Professional Agronomist and Soil Scientist. My resume is attached as Exhibit "A" and incorporated herein by reference as though fully set forth. It outlines the highlights of my 40 years professional experience in dealing with water and land resour the major part of which have been associated with the operatio and maintenance of irrigation systems and on-farm irrigation practices in the Western United States, particularly in the l Colorado River area.

2. Several months ago the Imperial Irrigation District requested that I review its water ordering and delivery procedures for the last 10 years as related to its water users on-farm irrigation systems, cropping practices, soils of the Imperial Valley, and its climatic environment. Also, I was requested to review the "Affidavit of William S. Gookin in Support of Plaintiffs' Motion for Preliminary Injunction" in this case. I have reviewed all of the materials furnished to Plaintiffs by IID from time to time as a part of the continuing informal discovery process. In addition, I have reviewed copies of the depositions of R. F. Carter, J. Robert Wilson, Don Clark, Beuford Bradley, William Gookin, Joe Loper, David McLaughlin, Paul Lopez and Russel Brodbeck.

3. Imperial Irrigation District's operational procedures and its water users' on-farm irrigation practices relate closely to the history of irrigation development in the Imperial Valley. Physical arrangements for diversion of water from the Colorado River at a point near the Mexican border and the facilities to bring that water through Mexico to the southern end of the valley shortly after the beginning of this century were made entirely by private enterprise. Land leveling for irrigation on farms was almost totally by horse drawn scrapers and wooden floats. The result is that most of the irrigation canals and laterals, and the on-farm ditches and leveling of fields are constructed to fit the general contour of the land which slopes toward the Salton Sea. Once the District distribution system and on-farm developments were in operation, it would be extremely difficult to make major changes because of the year-round cropping and irrigation.

construction of [illegible] in the Imperial Valley. The All-American Canal in the late 1930's and early 1940's made little change in the irrigation distribution system within the Valley. From an operation and maintenance standpoint, water delivered through the All-American Canal system is more silt free than prior waters thereby resulting in more growth of moss, algae and aquatic weeds in the District's distribution system. Such growth can be controlled best by drying up the distribution canals and laterals about once a month.

The climate, soils, and land ownership pattern in the District lends itself to intensive commercial agriculture with relatively few small or part-time farming operations. As a result, there is little need for small or short-time irrigation water orders.

The general characteristic of the Districts' irrigation distribution system continues to be one that has limited water storage capacity in the canals; the water elevation in some canals has to be raised by the use of check gates so as to deliver adequate streams of water to farmers' headgates; and some canals can be drained for maintenance and socalled moss control only by emptying them into wasteways or drains rather than delivering the so-called "run-down" water to water users.

4. On-farm ditches and land leveling generally slope toward the Salton Sea. This along with the low infiltration rate of the fine-textured clay soils which dominate the Valley, make it difficult to irrigate most crops without some runoff ("tail water") at the low end of the field. Fortunately, the fine-textured soils have a high water-holding capacity so that if an irriga-

order, he is often able to 'reirrigate' part of the land without losing excess water by deep percolation. As Colorado River water is relatively high in total dissolved solids (T.D.S.), some downward percolation of water beyond the root zone is necessary to avoid accumulation of excess salts in the root zone after evapotranspiration, and such "reirrigation" may provide beneficial leaching.

It must be emphasized that each irrigation serves the basic purpose of replenishing the moisture that has been extracted from the soil by evapotranspiration. Any water applied in excess of this amount will eventually find its way to the Alamo or New River or directly to the Salton Sea through (1) run off from the lower end of the farmer's fields; (2) as deep percolation drainage water; or (3) as wastewater from canals or laterals if deliveries to farmers are discontinued before the end of orders and there are no other water users to take the excess water.

5. The point of delivery to the All-American Canal is at Imperial Dam approximately 20 miles North of Yuma, Arizona. Scheduling of individual water orders in the District is closely related to the District's system of placing water orders with the Imperial Dam Supervisor of the Water and Land Resources Service (formerly Bureau of Reclamation). Both farmers and the District place their orders in daily (24 hour) increments. Similarly, the Imperial Dam Supervisor places orders for releases of upstream storage on a daily basis.

Water users on irrigation projects in the Western United States employ many different systems of placing water orders with

irrigation districts. For efficient irrigation, an irrigator must know the depth of water needed to replenish the water that has been extracted from the root zone by plants and evaporation. Second, he must decide whether he is going to include additional water in each irrigation for salt leaching or whether that is to be accomplished by separate irrigations (often preplanting). Once the depth of water needed is determined and the acreage to be irrigated is known, it is a simple matter to calculate the total acre-inches or acre-feet of water for an order. Depending on the design of each district's system and its method of operation, a water user places an order combining (1) a rate of flow and (2) a length of time, the sum of which will yield the total quantity of water desired. For example, on the nearby Yuma Mesa Irrigation and Drainage District and Wellton-Mohawk Irrigation and Drainage District in Arizona, deliveries are made largely in units of 15-16 cfs and the time of irrigation varied accordingly. In the Imperial Irrigation District the time is fixed in 24 hour units and the rate of flow varied to match the total quantity of water desired. In other words the only difference in the system of ordering water in IID and other districts in the Lower Colorado River area is that IID holds the time in constant units (24 hours) and varies the rate of delivery (cfs) while other districts tend to hold the rate of delivery in constant units and vary the time.

In each district in the Western United States the system used for water users scheduling water orders has been developed around (1) the design of the project conveyance and distribution system in relation to the source and quantity of water sup-

(2) the quality of water service the water users want and can afford; and (3) the local characteristics of soils, topography, draining, and cropping patterns. In the case of Imperial Irrigation District those characteristics are rather unusual. As pointed out heretofore, the District's distribution system and on-farm development predated the construction of major storage and diversion works on the Colorado River and the delivery of silt-free water. It takes 5 days for water releases from Lake Meade storage to reach Imperial Dam and another day or more for the water delivered to the District at Imperial Dam to reach most of the water users. Imperial Valley's agriculture involves high-cost and high-risk crops (ie. lettuce, cabbage, tomatoes, onions, etc.) in which a shortage of water at critical periods can be disastrous. Therefore, a high level of service and reliability of water service is a must. The land characteristics of fine-textured soils with low water-intake rates and fields that slope toward the Salton Sea result in most excess water from field applications finding its way to the Sea in the form of surface runoff and spills rather than in unseen deep percolation such as occurs in districts with coarser textured soils.

6. Despite the unusual and unfavorable characteristics for ease of operation as heretofore cited, the Imperial Irrigation District has perfected a system of estimating its water needs; placing its orders for diversions from Imperial Dam; and delivering water to its water users that has resulted in the District having one of the highest (1) conveyance efficiencies; 2) on-farm irrigation efficiencies; and (3) over-all project irrigation efficiencies of all gravity irrigated projects in

the United States.

I have carefully reviewed the Districts operational reco for the period 1968 through 1977, particularly the packets of material furnished to the Plaintiffs and numbered 1 through 2 From that material, I have prepared a summary sheet on "Effic of Conveyance and On-Farm Irrigation" which is attached as Exhibit "B". It shows that the annual efficiencies of convey ranged from 85 to 88 percent and averaged 86 percent for the 10-year period. The annual on-farm irrigation efficiencies during the same period ranged from 74 percent to 88 percent a averaged 81 percent. Over-all project irrigation efficiencie ranged from 64 to 76 percent on an annual basis, and averaged 70 percent for the 10-year period.

I have also examined a preliminary summary sheet for the years 1975-78 prepared by the Water and Land Operations Divis Lower Colorado Regional Office, of the then Bureau of Reclama (USBR) concerning "Delivery Efficiencies" for districts in th Lower Colorado Region and attached as Exhibit "C". The data computed from data in the USBR Crop Census and Monthly Water Distribution forms and the consumptive use data taken from Technical Bulletin 169, "Consumptive Use of Water by Crops i Arizona" dated September 1965, by University of Arizona Agri cultural Experiment Station. In its computation of consumpt use, the USBR assumed that 80 percent of the rainfall record at gages in the vicinity of the District was effective in me plant needs. In contrast, the District's computation of con sumptive use reflected in Exhibit "B" is based on lysimeter studies at the Imperial Valley Research Center and on the

Blaney-Criddle formula. It is my opinion that far less than 80 percent of the rainfall is effective in meeting plant needs, and that the District's computation is more accurate than those reflected in Exhibit "C". However, regardless of this small difference, the USBR summary in Exhibit "C" reflects that Imperial Irrigation District's on-farm irrigation efficiency and over-all District irrigation efficiency are both higher than for any other water user organization diverting water in the Lower Colorado River Region. On sheet 3 of Exhibit "C" the first sentence in the last paragraph should read as follows: "This would result in more water actually delivered to farms than was recorded which would decrease the onfarm efficiency while increasing the distribution efficiency." Data to complete the calculations for Palo Verde Irrigation and Colorado River Indian tribes, as reflected on Sheet 1, were received after Sheet 3 had been prepared.

7. I have also examined a "Report on the Water Conservation Opportunities Studies," dated September 1978, by the United States Department of Interior's Bureau of Reclamation (USBR) and Bureau of Indian Affairs (BIA) and attached as Exhibit "D".

This study covered 61 irrigation projects, including 46 USBR projects and 15 BIA projects, in 15 Western states. Table 3 in the report, on page 32 lists Imperial Irrigation District as having an over-all water use efficiency of 70 percent, the highest of any of the 61 projects studied except for the Navajo Indian Irrigation Project in New Mexico. The latter is a new project still under construction where water is conveyed through lined canals and/or closed pipe systems and applied almost

exclusively by sprinkler irrigation. The 72 percent overall project irrigation efficiency listed in the report is in agreement with the 10-year average listed in Exhibit "B" as compiled from District records, and further confirms that the District operational procedures, and the water users' scheduling and on-farm irrigation practices are outstanding when compared to other districts throughout the Western United States.

Table 1 on Page 17 of Exhibit "D" describes an irrigation system with a farm efficiency of 70 percent as one on which the land leveling, delivery pipeline, and drainage system meet design standards. Imperial Irrigation District's average on-farm irrigation efficiency exceeds this 70 percent design standard by an average of 11 percent over the past 10 years.

8. I have read the "Affidavit of William S. Gookin in Support of Plaintiff's Motion for Preliminary Injunction" and make the following comments:

(a) On page 2, under item 2, Mr. Gookin makes reference to a document prepared by Imperial Irrigation District and identified as Exhibit 12. On lines 19-22 he states that this Exhibit reports the quality of leaching water at nine locations throughout the District. The so-called Exhibit 12 actually reports leaching water quality at only two locations, ie: (1) Pumice Drain at Lateral 4-A; and (2) D-1 Holtville Main Drain Outlet.

(b) On page 3, line 3, the 10 year period is not identified.

(c) On page 3, line 6, Mr. Gookin states that the drainage water, according to Exhibit 12, averages 10,700 ppm dissolved minerals. He does not identify over what period of time, how

the average ppm for the water in the Pumice Drain and the D-1 Holtville Drain, as listed in Exhibit 12 is far below this figure and only one or two readings out of the hundreds listed ever reaches this level.

(d) On Page 4, item 9 and 10 - Mr. Gookin states that providing water users next day deliveries after ordering water and requiring them to take the water in 24 hour increments encourages waste of water. In my opinion those practices do not encourage waste of water and Exhibits "C" and "D" above mentioned show that other districts in the Lower Colorado River area using other methods of ordering and scheduling are less efficient.

(e) On Page 5, lines 2-3 - The statement that if a farmer learns during an irrigation that his estimate of the quantity of water needed was wrong, he can do nothing to correct it, is in error. In some instances he can reirrigate a portion of his field to increase the moisture stored in the soil or to further leach excess salts. In some instances the ditch rider can get another water user to take the water early if he has an order on the same or a near by part of the lateral system. The records of project efficiency show that it is the exception when water must be shut off early at the farmer's headgate and absorbe in to the project system for possible spill.

(f) On Page 6, line 2-4, reference is made to "leaching water from the nine data points reported on Exhibit 12, and these ranged from a high of 31,301 ppm to a low of 510 ppm." Again, there is no such records of leaching water from 9 points listed in Exhibit 12. Nor any figures that approach 31,301 ppm or 510 ppm.

(g) On Page 6, lines 12 and 13, the result of his calculations cannot be reproduced from the data cited. If Mr. Gookin's calculations were made from data in Exhibit 25 which lists 9 locations and was furnished to Plaintiffs, then he used an inadequate number of sampling locations to be representative of 484 drain sumps and 4,000 farm tile water outlets in Imperial Valley. The 9 drain sumps listed in Exhibit 25 flow less than 1000 acre-feet per year on an average which is an inadequate quantity to represent the several hundred thousand acre-feet that is drained annually from the root zone of irrigated lands in the Valley. The quality of drainage water from the drained fields represents the quality of water in the lower root zone. If that quality averaged 10,700 parts per million salts as Mr. Gookin asserts on line 12, page 4, of his Affidavit, then there would be little or no production of salt sensitive crops (ie. lettuce, cabbage, tomatoes, onions, etc.) and only reduced yields on moderately salt tolerant crops. The current high production of a wide range of salt sensitive crops in the Valley is sufficient evidence that the 10,700 ppm figure is not representative of Imperial Valley's drainage waters.

(h) Page 6, item 13. Mr. Gookin's conclusion that "84% of the water which enters the Salton Sea through the Imperial Irrigation District has never been applied to farmland is totally erroneous. If this were true, it would leave only to come from all forms of drainage and farm runoff. Without at least this amount of water passing through the root zone for leaching, on the average, the District's soils would by now be so salty that it could not have the present cropping plan.

The District's operational records list separately Main Canal and Division Operational losses by months and years to the Alamo and to the New River Channels and directly to the Sea. It also lists drainage to each channel. Those records show that the average annual operational losses (water never delivered to farms) for the 11-year period 1968-1978 is slightly over 1 percent of the total water reaching the Salton Sea through the Alamo and New River Channels and by direct operational losses. Apparently Mr. Gookin has assumed that leach water from tile drains is the only water that has "been applied to farm land" and then moves on to the Alamo and New Rivers. This ignores the fact that some 1,600 miles of deep open drains and approximately 70 miles of deep channel of the Alamo and New Rivers drain 20% to 30% of the district's lands; and that surface runoff from farms may pick up some salt load in passing over the land prior to flowing into the Alamo and New Rivers.

(i) On Page 7, line 9-10, Mr. Gookin suggests " ...curtailing wasteful irrigation practices ...". As previously stated, Imperial Irrigation District has one of the highest over-all irrigation efficiencies of any water user organization in the Lower Colorado River Region. When one considers that the on-farm irrigation efficiency averages above 80 percent and that for adequate leaching of salts an additional 15-25 percent of the consumptive use is required, depending on the crop being grown, then it becomes clear that there is little, if any, "wasteful irrigation practices."

(j) On Page 8, item 7, Mr. Gookin states that "The District could also virtually eliminate spillage by scheduling

water deliveries to customers along the same canal sequentiall so that a second customer could begin to take water from the c as soon as the first customer completes his irrigation."

This is an obsolete and totally erroneous concept of wate scheduling from both an irrigation efficiency and farm economi standpoint. His proposal is similar to the old inefficient "Warabundi" system still used in much of the Indus Valley in Pakistan where application efficiencies range from 10 to 40 pe cent.[1/] A strict sequential scheduling of water deliveries to customers along a canal can only be efficient if all farmers a growing crops with like water use; the soils on all farms are uniform in water-holding capacity; and all farmers regiment th other on-farm operations, such as cutting alfalfa hay, sequent ly. Otherwise some farmers will be irrigating crops which do need to be irrigated and other farmers' crops will be moisture stressed and damaged before it is that farmer's sequential tur to irrigate. It must be emphasized that irrigation systems ar operated for one dominate purpose and that is to efficiently supply water to the soil root zone as needed to replenish that depleted by plants and evaporation.

9. It is my professional opinion that if the proposed preliminary injunction is granted the Plaintiffs, irreparable damage will result to water users in Imperial Valley and that inflow to the Salton Sea will increase rather than decrease.

1/"Irrigation Practices and Application Efficiencies in Pakistan," by Wayne Clyma, Arshad Ali, and Mohammad Ashraf, Jan. 1975. Publication No. 36, West Pakistan Water and Power Authority.

In regards to item 1 of the Motion, it is virtually impossible to operate an irrigation system serving nearly a half-million acres of highly diversified intensive cropping, where most of the lands are at least 24 hours water-flow time from the point of diversion, and in an environment where sudden climatic changes in temperature and wind velocity can quickly change water demands on crops, without some operational losses or spills from the system. Such an injunction would only leave two alternatives ie. (1) continue to meet crop needs, but route all excess water through farmers fields and waste boxes; or (2) operate the irrigation system at less than irrigation demand capacity so as to avoid spill. Either form of operation would cause obvious damage to farmers in the District. The first form of operation would not reduce flows to the Sea.

Item 2 of the Motion is for an injunction to cease requiring customers to accept delivery of water for a minimum of 24 hours. The evidence shows that this long-standing system of operation by the District has resulted in one of the most efficient district operations in the Lower Colorado River area, and indeed in the Western United States. The District's conveyance, distribution, water measuring procedures are all designed, and employees are all trained in this system of operation. Likewise, the water users have adjusted their on-farm facilities and practices to match this type of operation. It is my opinion that any sudden change in the system of operation would lessen the overall efficiency for an extended period of time thereby increasing flows to the Salton Sea. Additionally, any loss in efficiency and change in operating techniques would likely

increase costs to the water users.

Item 3 of the Motion is for an injunction to prevent the District from "Accepting orders for water independently of ea other from customers served by the same lateral." I must ass that this relates directly to item 17 of Mr. Gookin's Affidav which suggests that the District could virtually eliminate spillage by scheduling water deliveries to customers along th same canal sequentially. As discussed heretofore, this is on of the least efficient methods of operating an irrigation sys With the great diversity of crops in the District, it would r sult in some crops being irrigated before needed and other cr suffering for lack of water before their sequential turn was repeated. Where crops are irrigated prior to need, flows by percolation into drains and as "tail water" would increase, t by more than off setting any reduction in spills from canals.

In my opinion, the best opportunities for minimizing flo to the Salton Sea are through continuation of the District's present system of scheduling, ordering, and delivering water along with a continuation of its improvements in the delivery system through ditch lining and construction of regulating re servoirs. In some instances, improvements in on-farm irrigat efficiency could be achieved by (1) more accurate scheduling water orders to match soil moisture depletion by crops; (2) refinements in land leveling and irrigation system lay out; (3) lining on-farm ditches; and (4) where engineeringly and economically feasible the installation of facilities to pum back tail water to the farm delivery point. However, all o these are on-farm practices which would have to be adopted

individual water users.

Dated: 12 - 3 - , 1979.

Maurice N. Langley
MAURICE N. LANGLEY

SUBSCRIBED AND SWORN TO
BEFORE ME THIS 3RD DAY
OF DECEMBER, 1979.

Notary Public
EXPIRES 6/14/82

(Exhibits A through D referred to in the affidavit are on file
in the Southern District Office of the
Department of Water Resources)

[illegible], FINCH, [illegible]ER & FOOTE
Attorneys at Law
895 Broadway
El Centro, California 92243
Telephone: 714 352-2821

Attorneys for Defendant
IMPERIAL IRRIGATION DISTRICT

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

SALTON BAY MARINA, et al., Plaintiffs, vs. IMPERIAL IRRIGATION DISTRICT, et al., Defendants.	Civil Action No. 76-1095-T AFFIDAVIT OF J. ROBERT WILSON IN OPPOSITION TO PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION

STATE OF CALIFORNIA)
(ss.
COUNTY OF IMPERIAL)

J. ROBERT WILSON, being first duly sworn, deposes and says:

1. I am the manager of the water department of IMPERIAL IRRIGATION DISTRICT with general overall responsibility to supervise the operation and maintenance of the water department. I have been employed by the District for almost thirty-five (35) years beginning in 1946 in the engineering department. In 1955 I went into the All-American Canal section at Calexico and in 1959 I was transferred to the Imperial Dam on the Colorado River. In 1967 I returned as general superintendent of the All-American Canal section, then I became general superintendent of the south

EXHIBIT "C"

end of Imperial Valley and in 1976 I was promoted to [illegible] of the water department. My duties, primarily in the water department, have made me familiar with the entire water distribution and delivery system.

2. There are approximately 450,000 acres of land being irrigated in IID at the present time. The soils on these lands are mixed and vary greatly from place to place. Generally the rate at which the soils can absorb irrigation water is on the slow side. Most lands are sloped in either one or two directions for irrigation purposes. Around the perimeter of the Valley the slopes are steeper and water must be applied at a slower rate in order to properly irrigate such lands. IID maintains approximately 1,600 miles of canals and laterals with approximately 5,500 delivery points. The delivery points service farmlands varying in size from 20 acres to 320 acres although a few deliveries service lands outside of those limits. Orders for water generally vary between 4 cfs and 15 cfs. A few deliveries may run as high as 30 cfs. The great majority of farm ditches have a capacity of less than 15 cfs.

3. Water is ordered from the Water and Land Resources Service (formerly Bureau of Reclamation) approximately one week ahead of the day for its expected use. These orders can be modified and adjusted by giving approximately a 72 hour notice. Deliveries are made to the All-American Canal system at Imperial Dam on a twenty-four hour basis that is a selected number of cfs for twenty-four hours. Farmer's orders are required to be placed before noon on the day preceding the day delivery is desired.

////

However, IID rules permit delivery to be delayed to the second day and even to the third day. During 1979 to date approximately thirty percent (30%) of all orders by number and thirty-five percent (35%) of all orders by total volume were carried over to either the second or third day for delivery. More than two-thirds (2/3rds) of all orders are for more than twenty-four hours that is for forty-eight hours, seventy-two hours or even in some cases continuous. The water clerks and zanjeros in scheduling orders for delivery work with orders for the ensuing three days and attempt to balance and adjust deliveries to keep the flow of water as constant as possible. Total system flows vary depending on the crop seasons and climatic conditions between approximately 1,000 cfs and 7,000 cfs.

4. It is not true that IID keeps its canals full in order to provide next day service to water users. The canals are kept only as full as the system demand requires and if demand is low the level of water in the canals is correspondingly reduced. Orders are carried over in order to smooth demand and reduce fluctuations.

5. In my opinion if Plaintiffs' motion for temporary injunction is granted IID would have to double the number of zanjeros presently employed. The average cost of employing a zanjero is $15,000.00 per annum. At present there are approximately 140 zanjeros and in my opinion this number would have to be doubled at an annual cost in excess of Two Million Dollars ($2,000,000.00).

6. District records reflect that during the years 1971 to 1975, both inclusive, the average annual diversions at Imperial

Dam were 3,050,000 acre feet. In 1978 the diversions at Dam totaled 2,890,000 acre feet. For 1977 the diversions at Imperial Dam totaled 2,782,000 acre feet. For 1978 the diversions at Imperial Dam totaled 2,764,000 acre feet. And, the estimated diversion for 1979 using actual figures through September and assuming the same diversions for the last three months of 1979 the same as diversions for those months in 1978 the total diversions for 1979 will be 2,858,000 acre feet. The average diversions for the years 1976 to 1979, both inclusive, are therefore 227,000 acre feet less than the 1971 -75 period.

7. The records of Imperial Irrigation District indicate on March 31, 1975 the surface elevation of Salton Sea was -229 and that on November 18, 1979 the surface elevation was -227.5 a difference of 1.45 feet in more than four and a half (4-1/2) years. The records also show that the surface elevation of Salton Sea increased by a total of 1.45 feet as a result of st Kathleen in September 1976 and storm Dorene in August 1977.

8. The present surface area of the Sea is approximately 239,000 acres. The average annual evaporation rate from the surface of the Sea is approximately 6 feet. The average measured inflow from sources within Imperial Irrigation District to the Salton Sea for the years 1976 - 1978, both inclusive, is approximately 1,033,900 acre feet. For the years 1971 - 1975 both inclusive, the average annual measured inflow to Salton Sea was 1,094,800 acre feet. There is some unmeasured inflow from sources within Imperial Irrigation District but the quantity is not known.

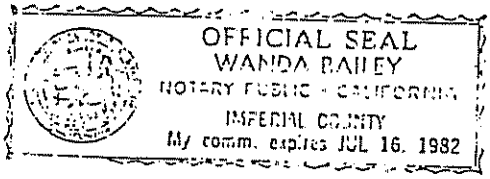
DATED: December ___, 1979

J. ROBERT WILSON

HORTON KNOX
ARTER & FOOTE
ATTORNEYS AT LAW

SUBSCRIBED AND SWORN TO
BEFORE ME THIS 4th DAY
OF DECEMBER, 1979.

Wanda Bailey
NOTARY PUBLIC



RESOLUTION NO. 26-81

WHEREAS, the Water Code of the State of California provides among other things that each district shall establish equitable rules for the distribution and use of water and that any charges shall be distributed equitably as determined by the Board of Directors. Further, any district may, in lieu of levying assessments, fix and collect charges for any service furnished by the district including a stand-by charge, whether water is actually used or not; and

WHEREAS, the Constitution of the State of California mandates the conservative use of water and states that because of the conditions prevailing in the State, the general welfare requires that the water resources of the State be put to beneficial use to the fullest extent of which they are capable and that all unreasonable use of water be prevented and that the conservation of such water is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare; and

WHEREAS, the Board of Directors has heretofore approved Resolution No. 45-76 adopting a 13-item schedule of water conservation practices. The Board subsequently endorsed the formation of a Water Conservation Advisory Board to evaluate the District's program of water conservation practices, which resulted in a recommendation and subsequent adoption by the District Board of a 21-point water conservation program as detailed in Resolution No. 49-80 as a supplement to the original 13-item program; and

WHEREAS, prevailing circumstances have caused the Board of Directors to consider augmentation of several specific elements of the water conserya-tion program; i.e., concrete lining of District laterals, East Highline Canal water recovery lines, and construction of regulating reservoirs; and

WHEREAS, it is deemed necessary to adjust water rate schedules including the water availability charge to provide revenue to finance the proposed expanded program. To this end a public hearing was duly noticed and held at 10:00 a.m., Tuesday, April 28,1981, to consider the proposed water rate increases.

EXHIBIT "F"

NOW, THEREFORE, on motion of Director Gallegos, seconded by Director Moore, BE IT HEREBY RESOLVED that the following items herein set forth, in convenient form, represent the several actions of the Board of Directors in the adjourned Board meeting and workshop convened on May 1, 1981:

a. Increase the concrete lateral lining program by $800,000 annually.

b. Provide $500,000 annually to continue the East Highline water recovery program.

c. Accelerate the construction of water regulating reservoirs by $1,000,000 annually.

d. Employ and equip approximately 15 additional personnel (zanjeros, patrolmen, waste checkers) to improve water regulation on swing and graveyard shifts.

e. Employ a water conservation supervisor in Water Department to perform assignments in accordance with approved position description.

f. Enter into a 2-year irrigation scheduling demonstration program, purchase two (2) neutron probes for determining soil moisture content, and employ, train, qualify and license personnel to use the same to provide farmers with data to help them determine adequate irrigation needs.

g. Schedule sequential water deliveries to certain flat and/or bordered land where such crops as wheat, alfalfa or Bermuda grass are farmed and can be irrigated in this manner. Employ necessary personnel to assure successful application of this service on a limited and trial basis.

h. Schedule monthly meetings in appropriate locations to create better understanding between District directors, management/personnel and the water users in regard to their respective operations, including full discussion of the 21-point water conservation program and its intended purpose.

BE IT FURTHER RESOLVED, that the proposal to expand Item (4) of the 13-item water conservation practices be referred to the Water Conservation Advisory Board for study and recommendation; namely, to add the following sentence:

"Should it become necessary to levy assessments against surface field discharge measuring 15% or more on subsequent irrigation runs for any one (1) delivery gate in a calendar quarter, each successive assessment multiplier shall be increased by one (1); i.e., 3, 4, 5, etc."

BE IT FURTHER RESOLVED, that Item "i" below be added as follows:

i. Any water user who, in the opinion of the Water Department manager or his designee, installs a device to circumvent the waste water rules shall, following the completion of that irrigation, have the delivery gate locked until the device is removed.

BE IT FURTHER RESOLVED, that the following changes in the Water Rate Schedules be approved as shown, and that all revenue derived from the water rate increase in "j" below is to be deposited in a Special Water Conservation Fund specifically to cover costs of the expanded water conservation program.

j. Increase the basic rate by $1.00 per acre-foot from $6.50/A.F. to $7.50/A.F., effective July 1, 1981.

k. Increase annual water rate under Schedule No. 2, Pump Service, from (3 A.F./Ac. x $6.50/A.F. = $19.50/Ac.) to (3.0 A.F./Ac. x $7.50/A.F. = $22.50/Ac.), effective July 1, 1981, and charge waste assessments to Pump Service lands thereafter based on $7.50/A.F.

l. Rescind Schedule No. 7, Water Service Charge to Public Land, effective January 1, 1982.

PASSED AND ADOPTED this 12th day of May, 1981.

IMPERIAL IRRIGATION DISTRICT

By Larry E. Edwards
President

By Larry E. Beels
Secretary

CC: Mr. Edwards
Mr. Carter
Mr. Twogood
Mr. Wilson
Ms. Fontaine
General Files

IMPERIAL IRRIGATION DISTRICT
ORGANIZED
JULY 23, 1911
EL CENTRO, CALIFORNIA

APPENDIX F

PHOTOGRAPHS AND DOCUMENTATION OF TERMINAL CANAL SPILLS WITHIN THE IMPERIAL IRRIGATION DISTRICT, MISCELLANEOUS SYSTEM FEATURES, AND ROSE CANAL SPILL, MEAN DAILY FLOWS, 1980

(Originals of all photographs on file in Southern District of the Department of Water Resources)

PHOTOGRAPHS SUPPLIED BY SUTHERLAND & GERBER

ELDER CANAL SPILL

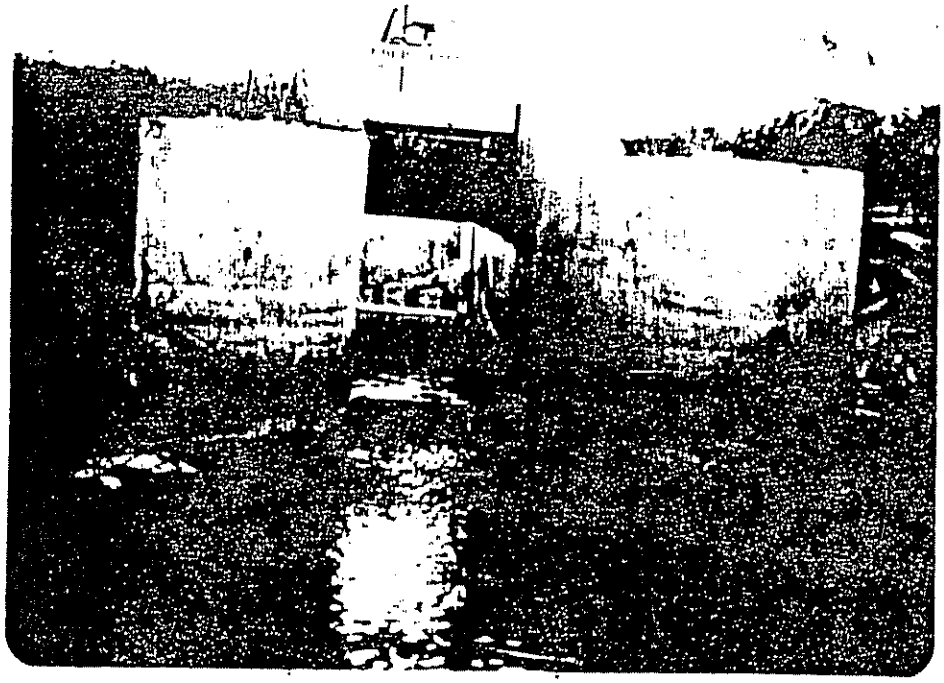


Plate 1-1. Jan. 10, 1979; 4:17 p.m.; Looking west at spill.

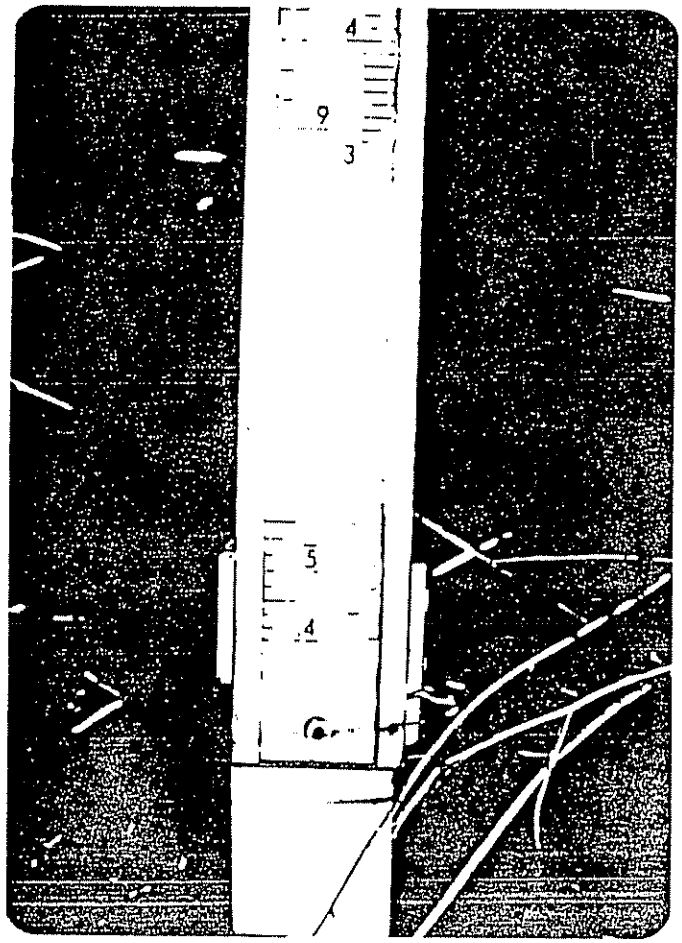


Plate 1-2. Jan. 10, 1979; 4:20 p.m.; Elder weir, reading: 0.9 (1.08 cfs)

ELDER CANAL SPILL

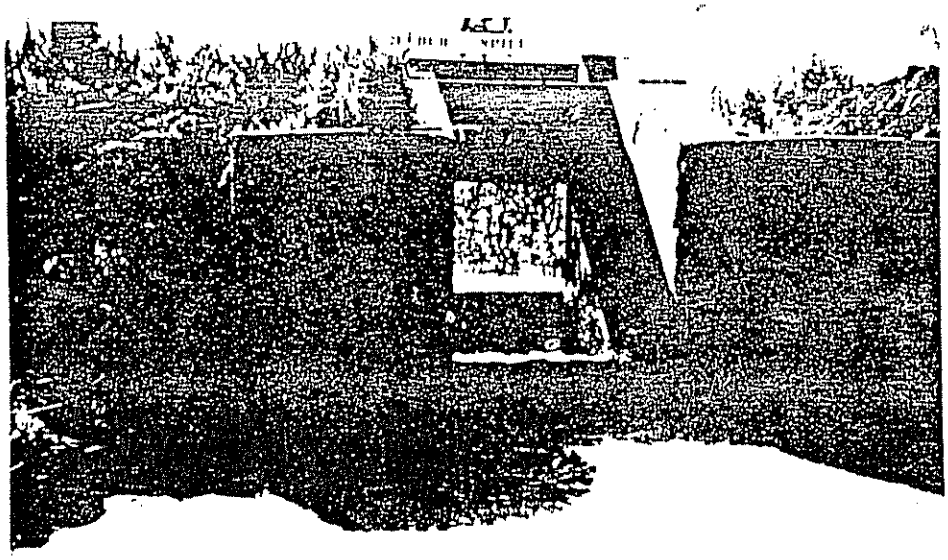


Plate 1-3. April 24, 1979; 3:07 p.m.; Looking west at spill.

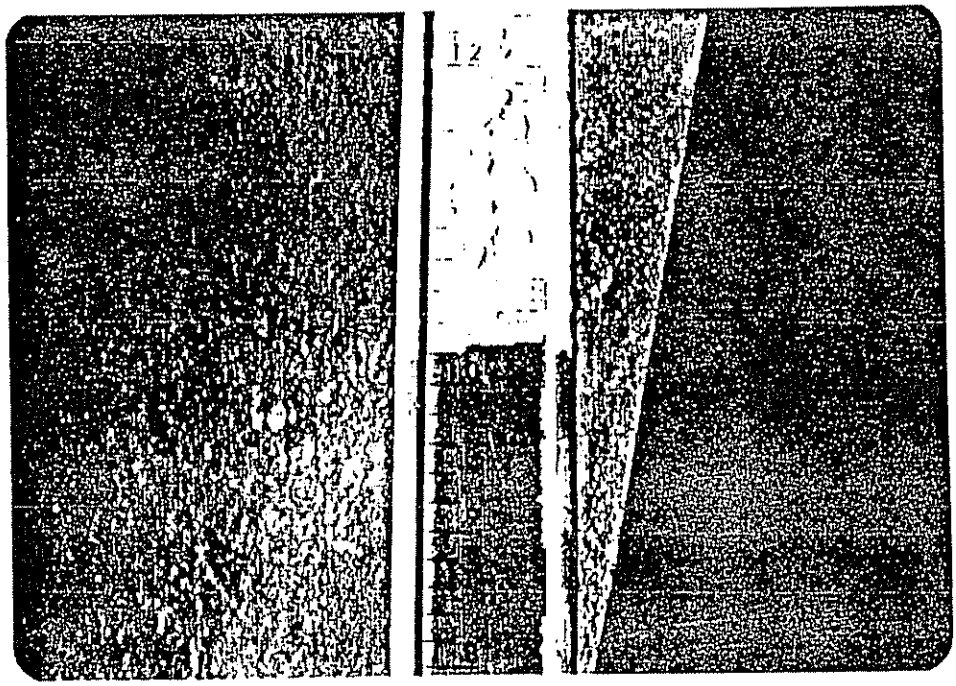


Plate 1-4. April 24, 1979; 3:10 p.m.; Elder weir, reading: 4.9 (5.88 cfs).

ELDER CANAL SPILL

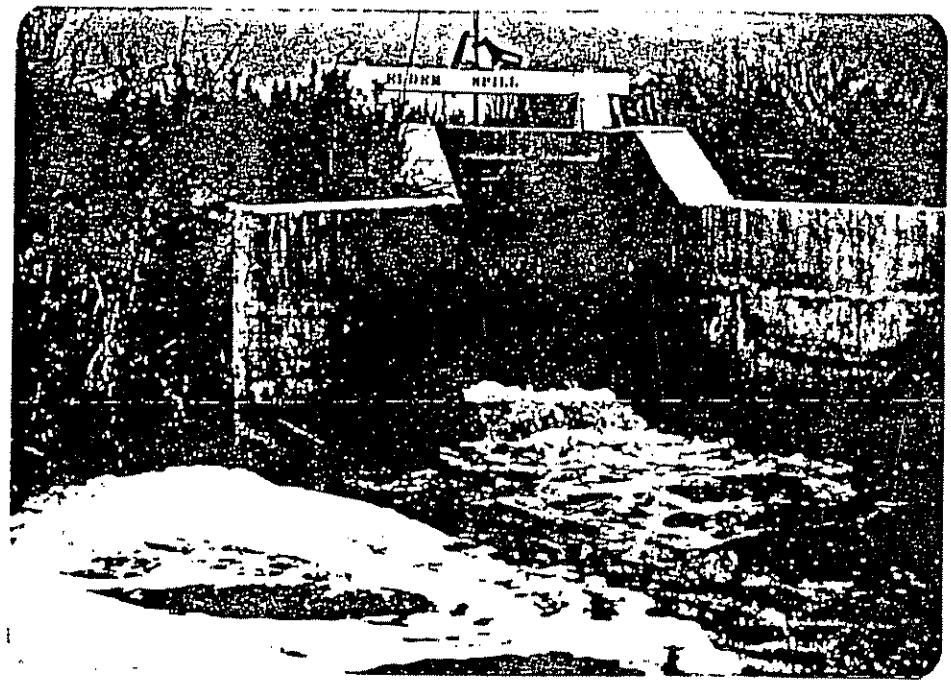


Plate 1-5. May 23, 1979; 11:16 a.m.; Looking west at spill.

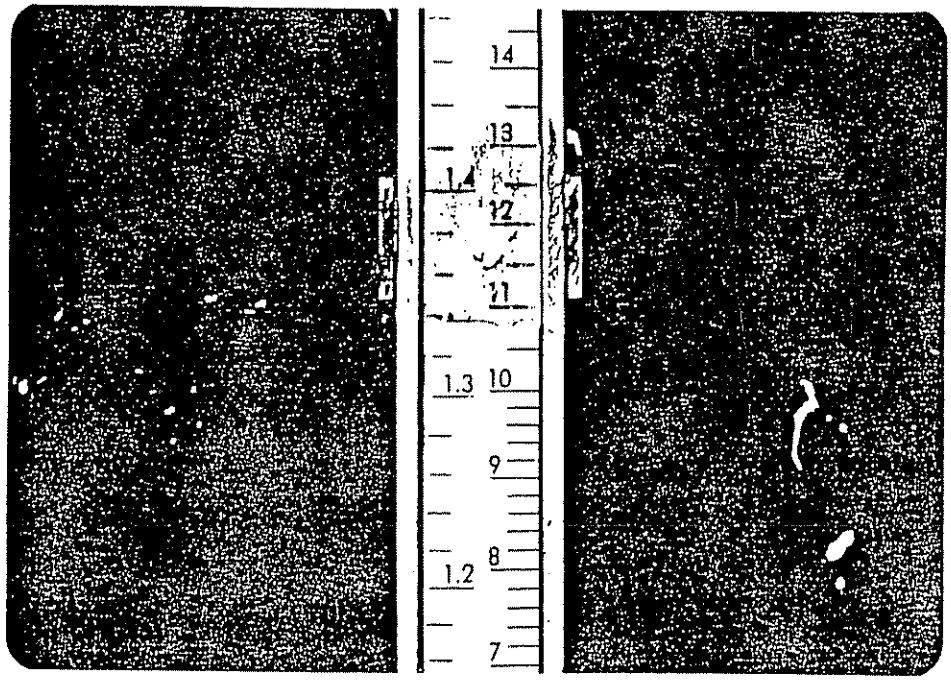


Plate 1-6. May 23, 1979; 11:19 a.m.; Elder weir, reading: 10.5 (12.6 cfs).

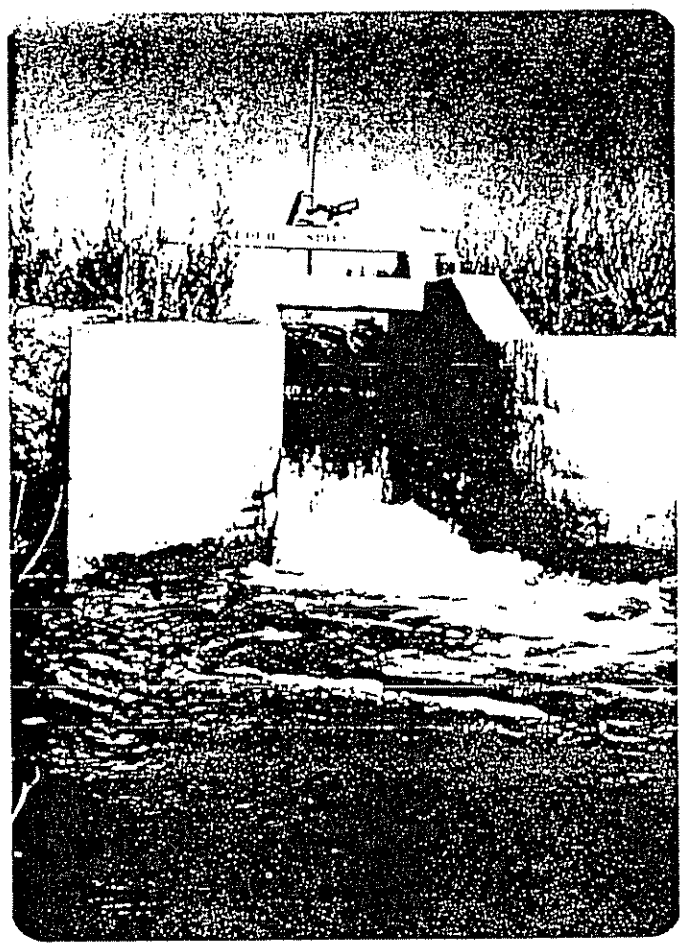


Plate 1-7. July 4, 1979; 9:07 a.m.; Looking west at spill.

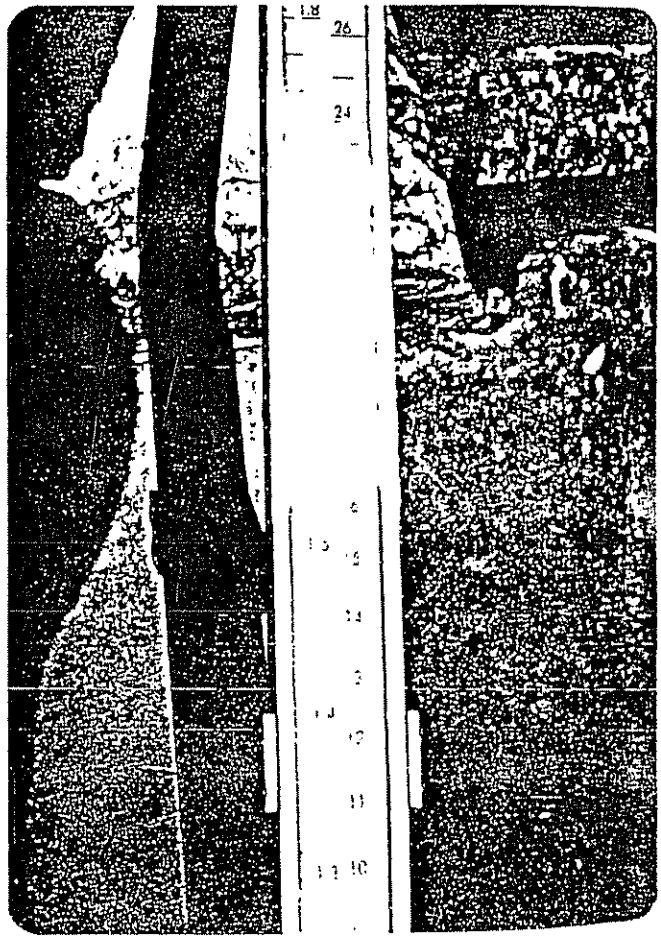


Plate 1-8. July 4, 1979; 9:15 a.m.; Elder weir, reading: 16.5 (19.8 cfs)

ELDER CANAL SPILL

e 1-9. July 27, 1979; 9:44 a.m; Looking west at spill.

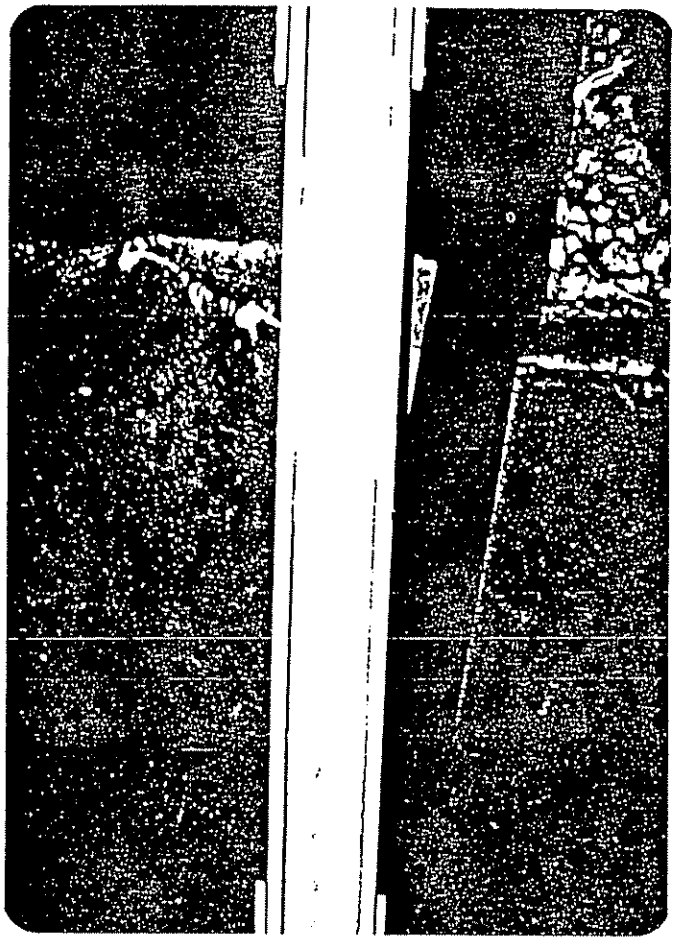


Plate 1-10. July 27, 1979; 9:48 a.m.; Elder weir, reading: 5.3 (6.36 cfs).

ELDER CANAL SPILL

Plate 1-11. Aug. 20, 1979; 9;36 a.m.; West at leakage.

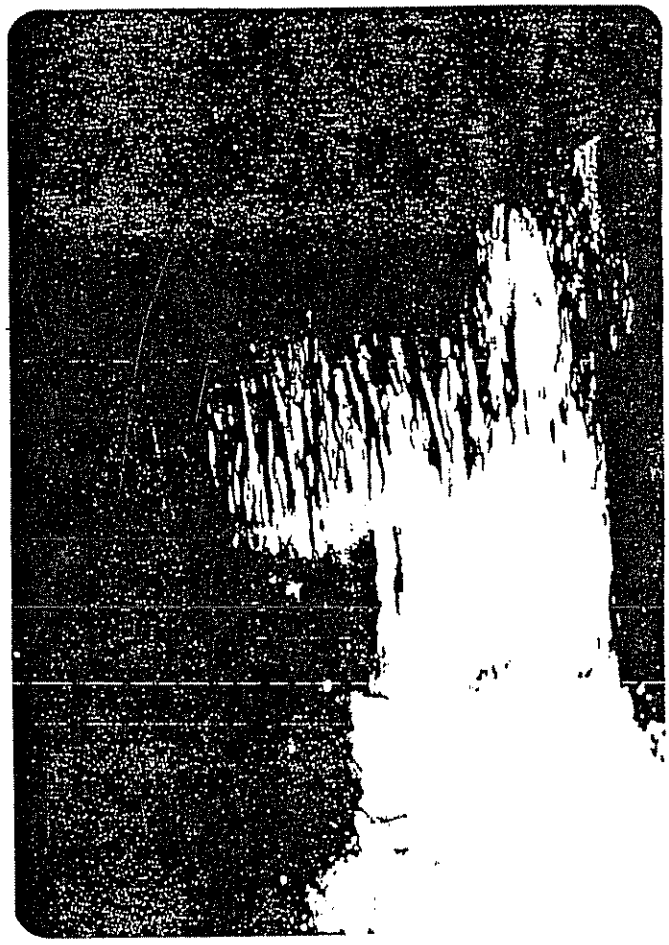


Plate 1-12. Aug. 30, 1979; 9;27 a.m.; Close up of spill.

ELDER CANAL SPILL

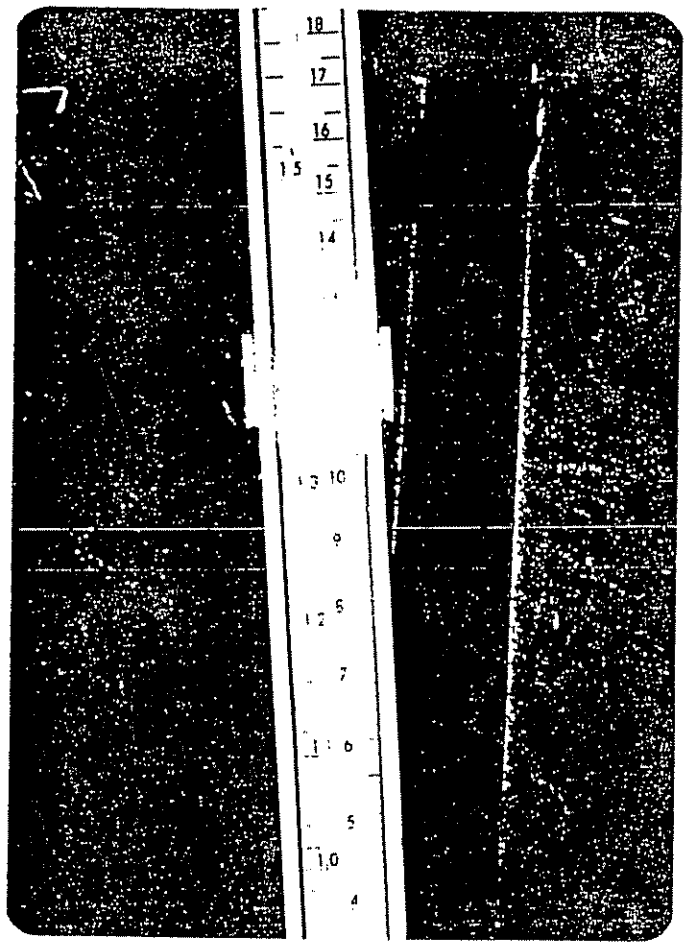


Plate 1-13. Aug. 30, 1979; 9:31 a.m.; Elder weir, reading: 10.5 (12.6 cfs).

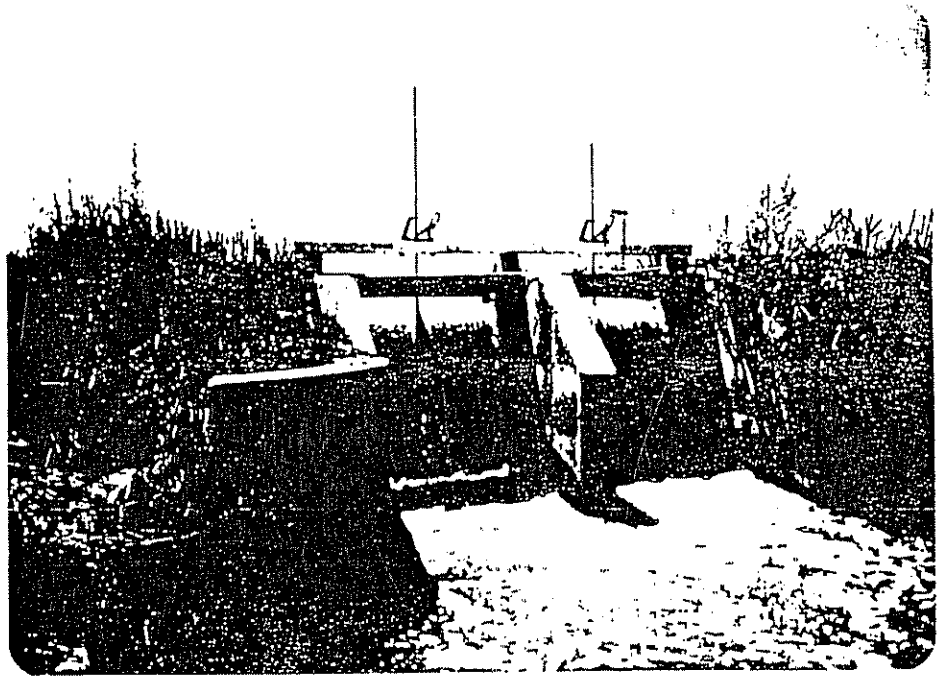


Plate 2-1. June 21, 1978; 2:19 p.m.; Looking west at spill.

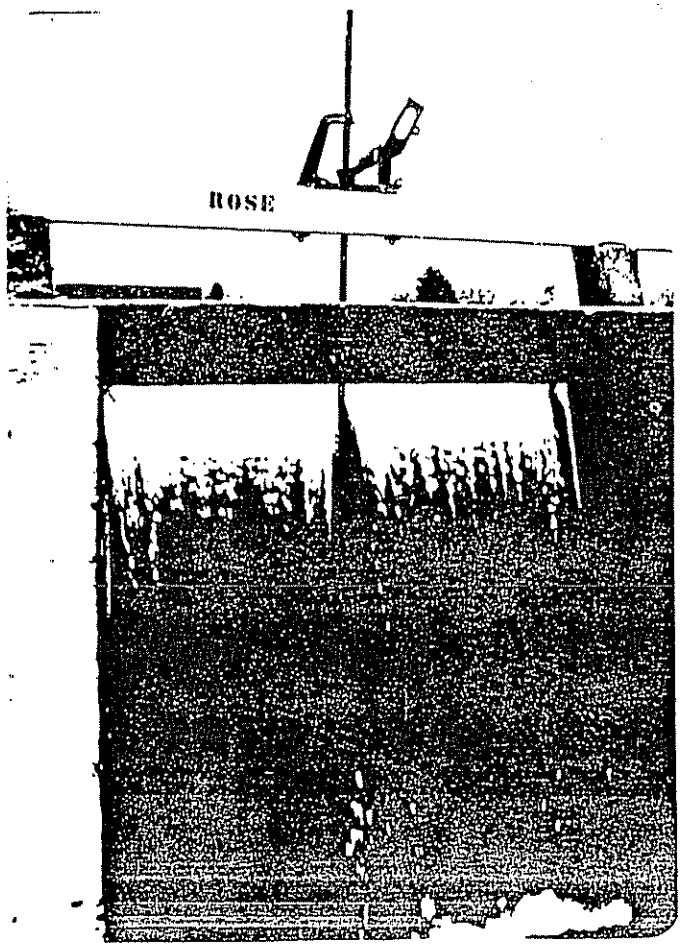


Plate 2-2. June 21, 1978; 2:22 p.m.; Close up, south gate.

ROSE CANAL SPILL

Plate 2-3. June 21, 1978; 2:27 p.m.; Close up, north gate.

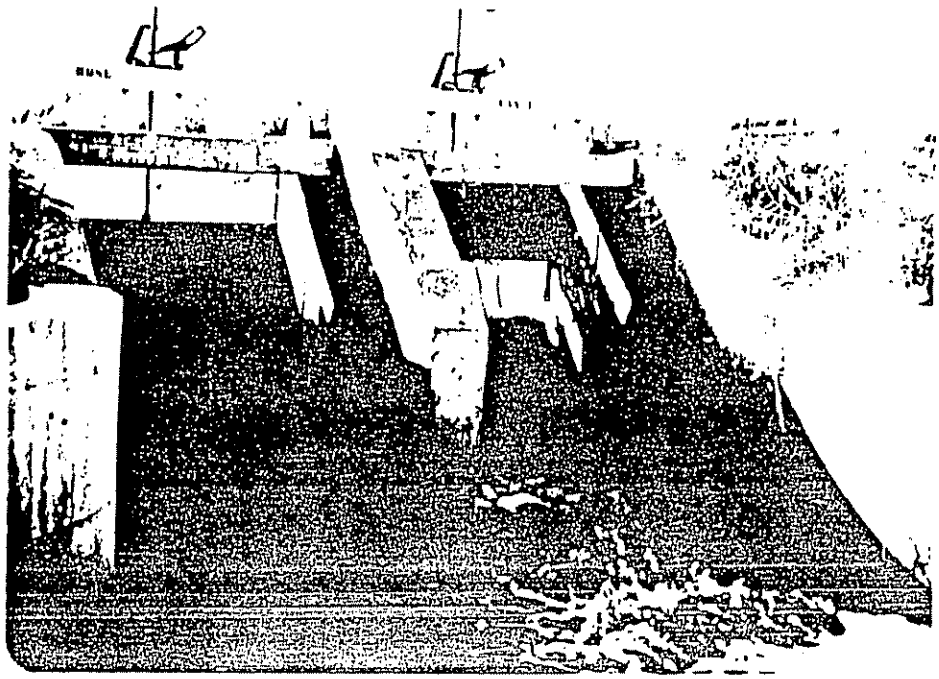


Plate 2-4 Dec. 3, 1978; 1:42 p.m. Looking west at spill

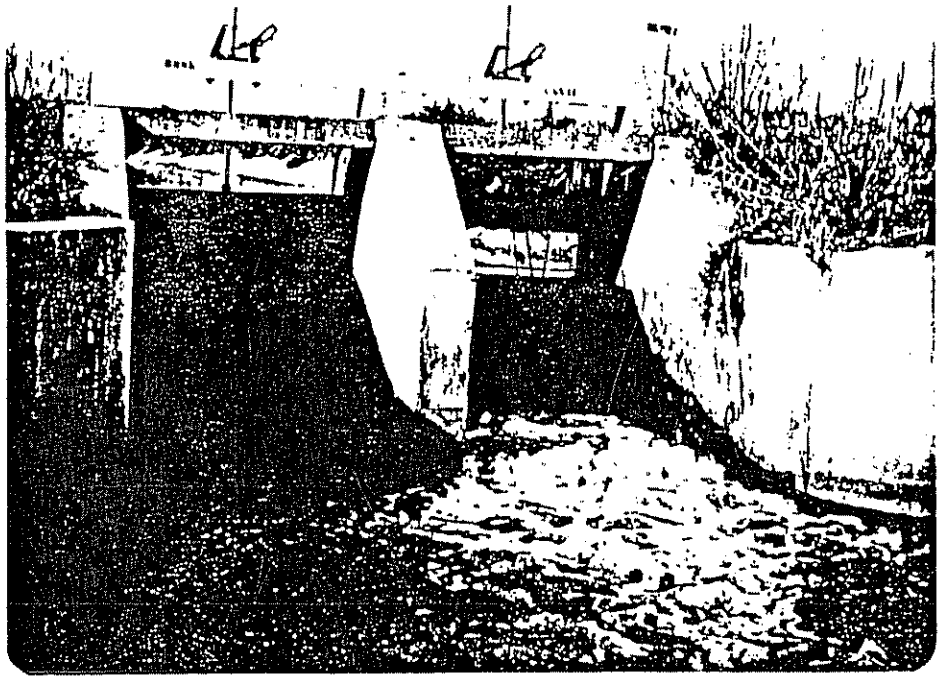


Plate 2-5. Dec. 6, 1978; 10:07 a.m.; Looking west at spill.

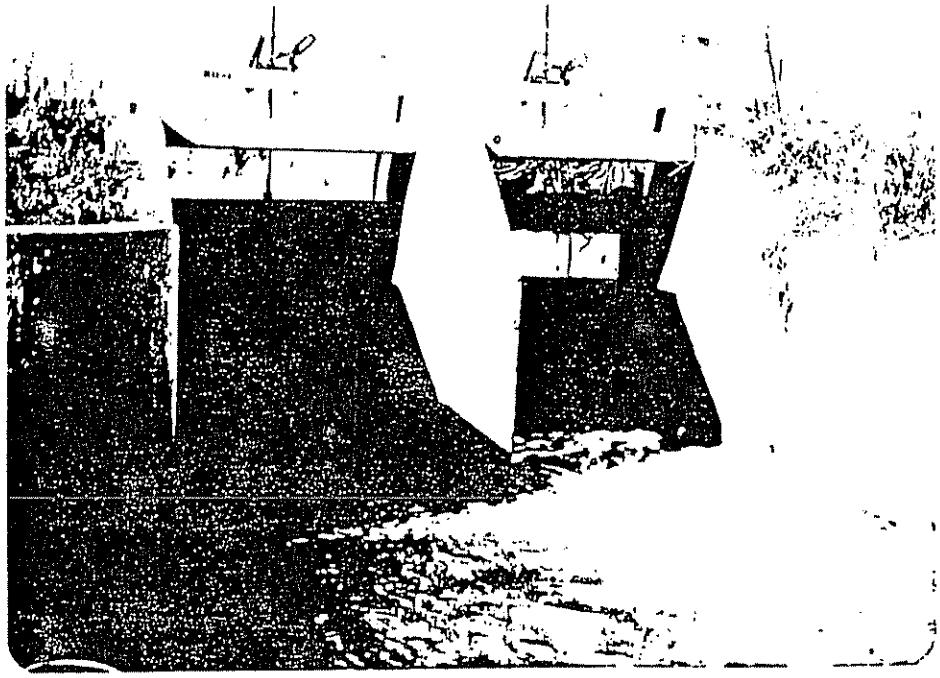


Plate 2-6. Dec. 15, 1978; 10:15 a.m.; Looking west at spill.

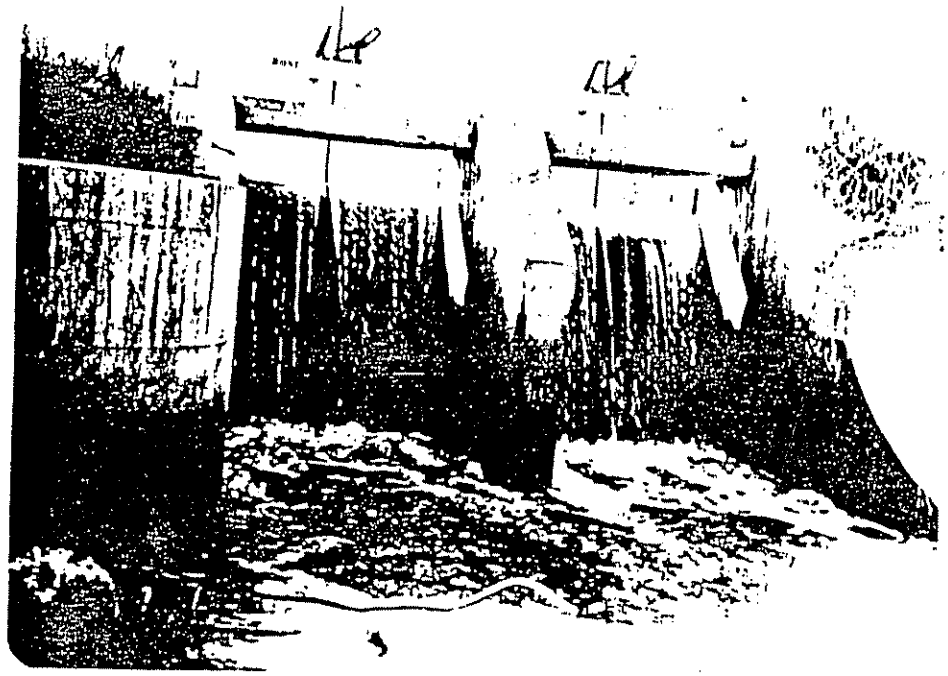
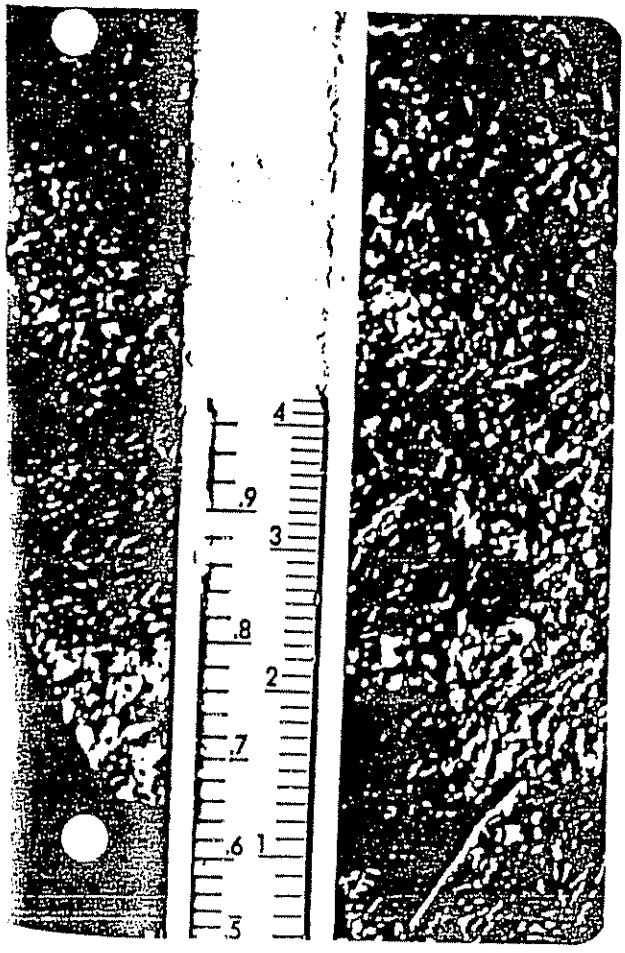


Plate 2-7. Jan. 22, 1979; 2:03 p.m.; Looking west at spill.



e 2-8. Jan. 22, 1979; 2:10 p.m.; Rose
north weir, reading

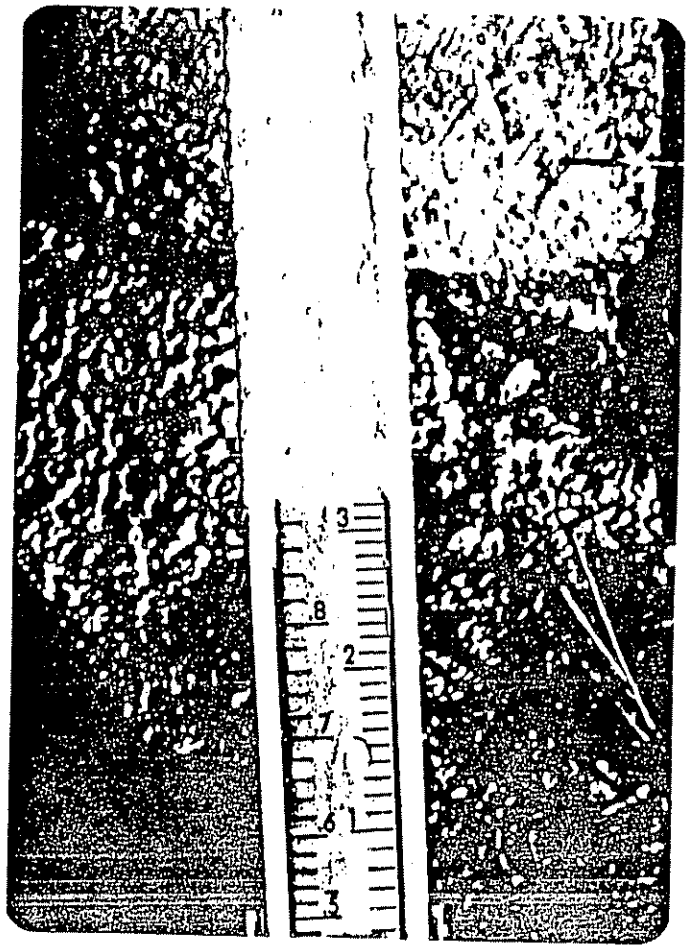


Plate 2-9. Jan. 22, 1979; 2:26 p.m.: Rose

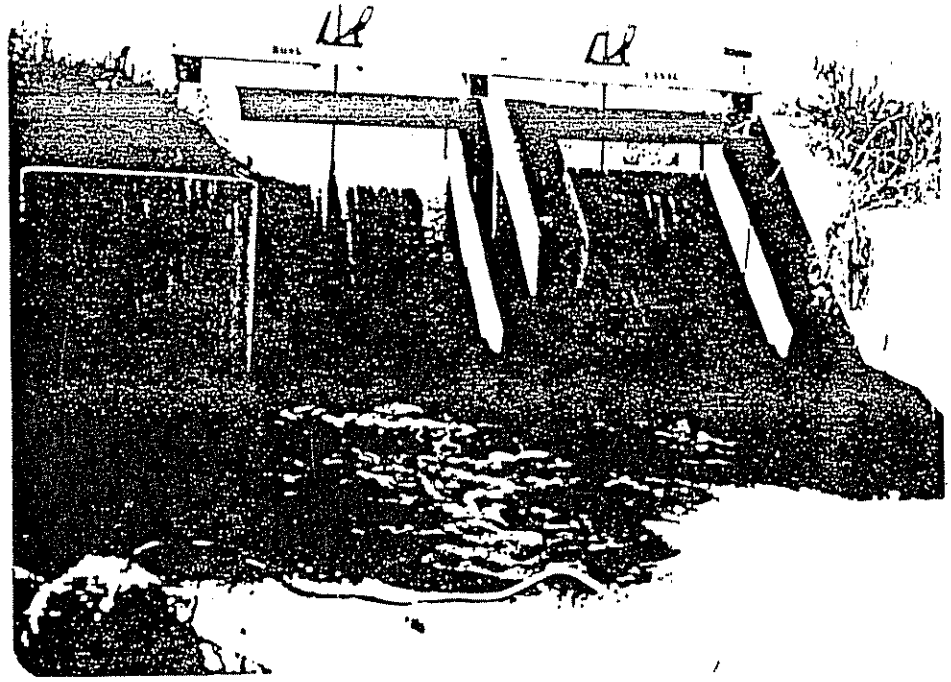


Plate 2-10. Feb. 18, 1979; 2:34 p.m.; Looking west at spill.

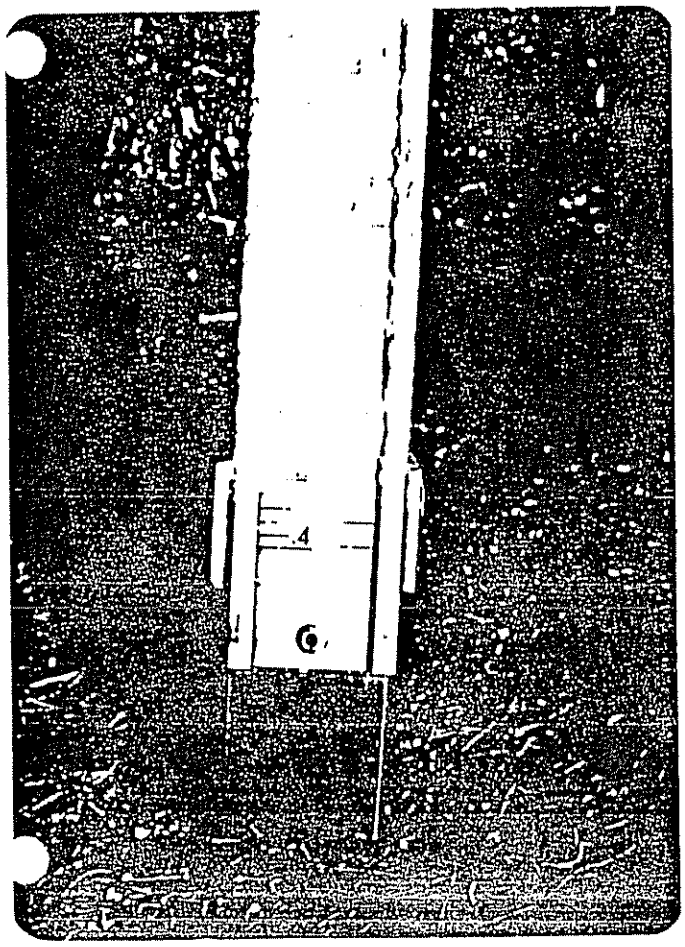


Plate 2-11. Feb. 18, 1979; 2:39 p.m.; Rose north weir, reading: 0.4(0.72 cfs).

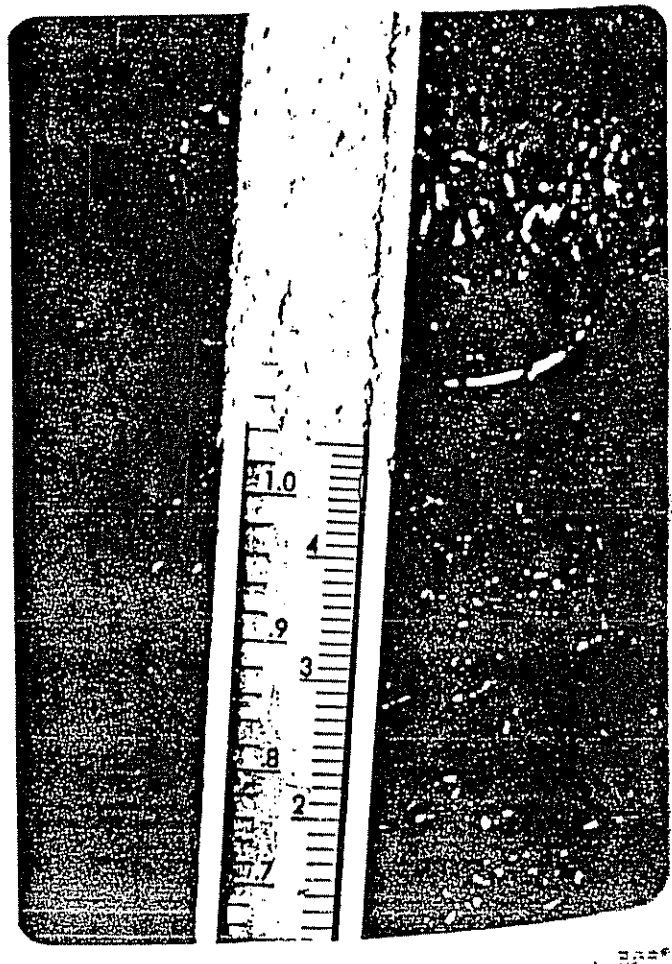


Plate 2-12. Feb. 18, 1979; 2:42 p.m.; Rose south weir, reading: [illegible].

ROSE CANAL SPILL

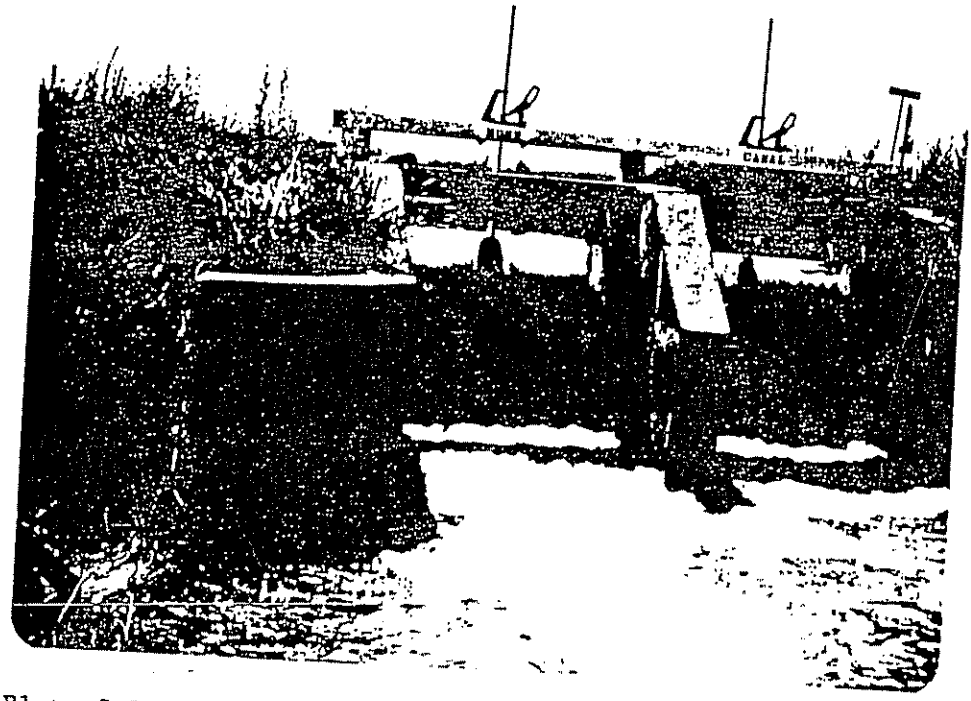


Plate 2-13. June 6, 1979; 2:58 p.m.; Looking west at spill.

Plate 2-14. June 6, 1979; 3:01 p.m.; North weir, reading: 2.9 (5.22 cfs).

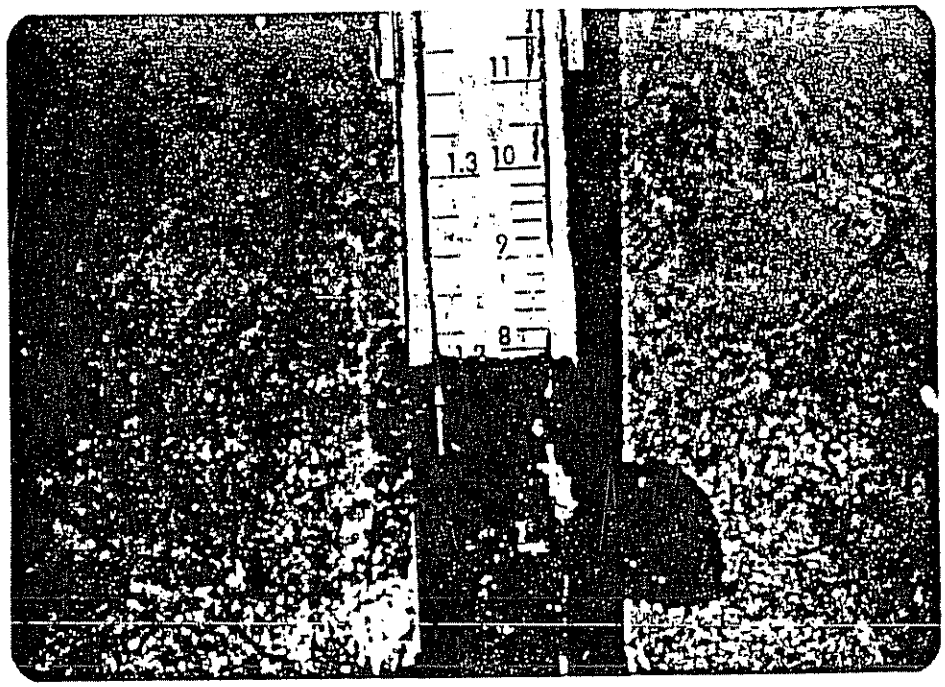


Plate 2-15. June 6, 1979; 3:03 p.m.; South weir, reading: 7.9 (14.22 cfs).

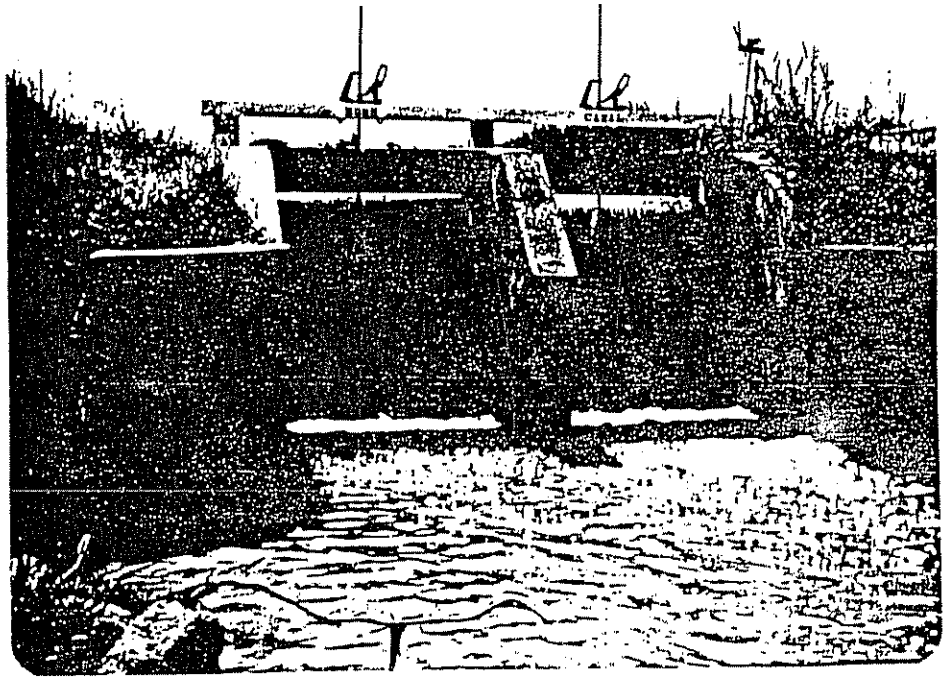
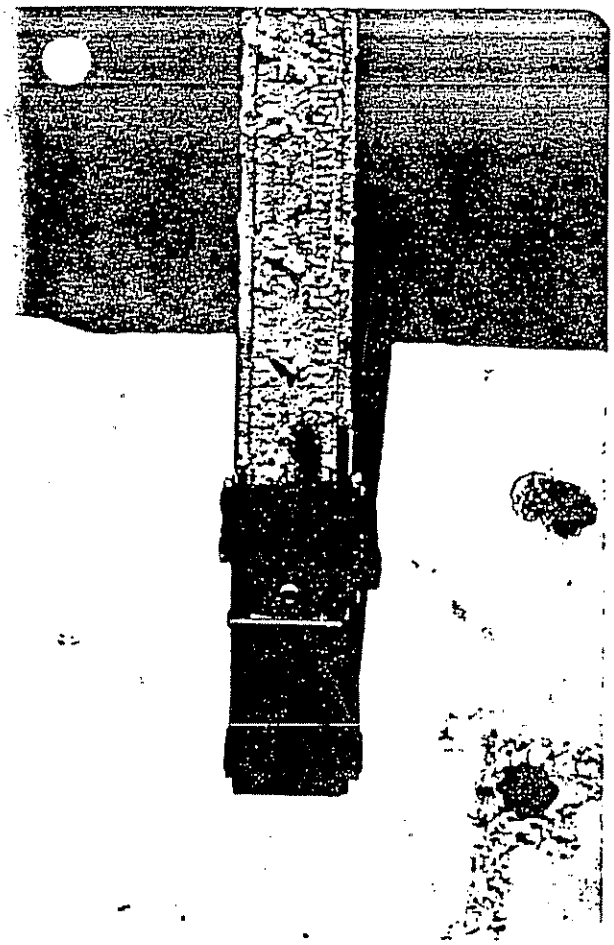


Plate 2-16. July 6, 1979; 3:28 p.m.; Looking west at spill.



2-17. July 6, 1979; 3:32 p.m.; South weir, reading: 0.6 (1.08 cfs).

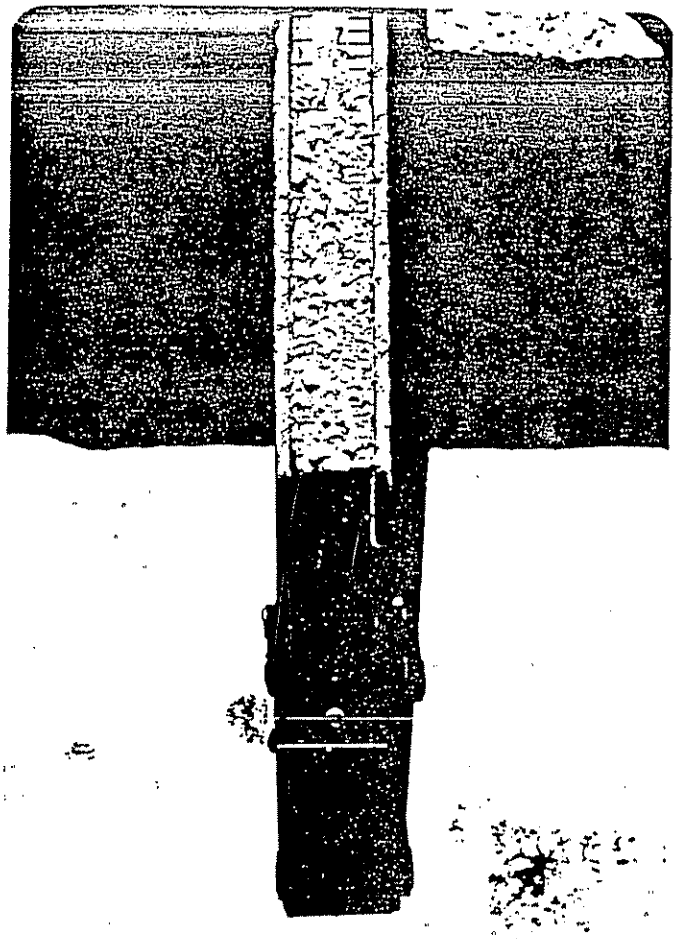


Plate 2-18. July 6, 1979; 3:34 p.m.; North weir, reading: 1.7 (3.06 cfs).

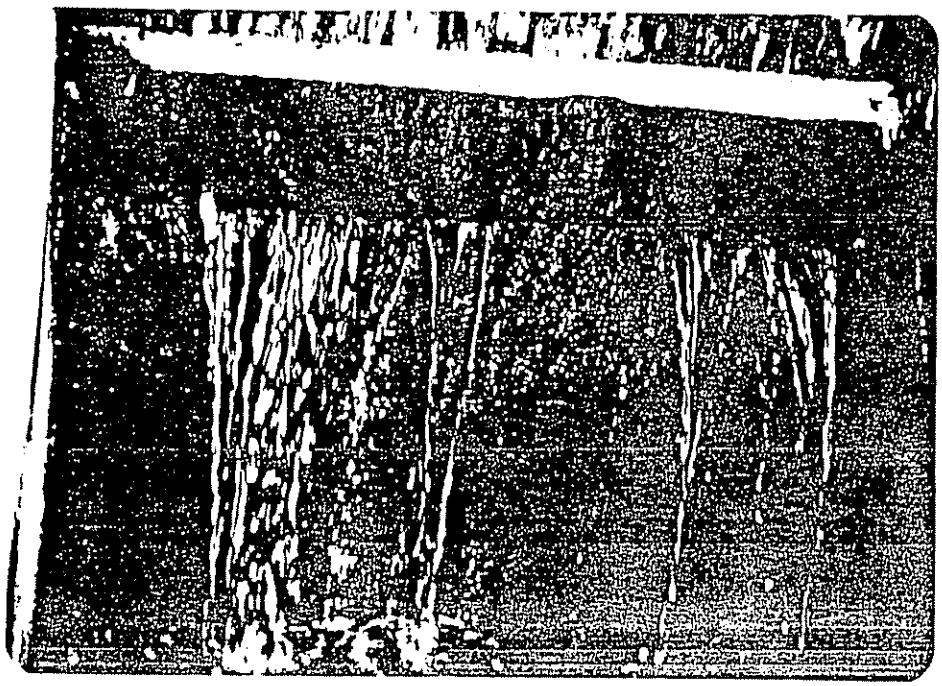


Plate 2-19. July 25, 1979; 4:13 p.m.; North gate leakage.

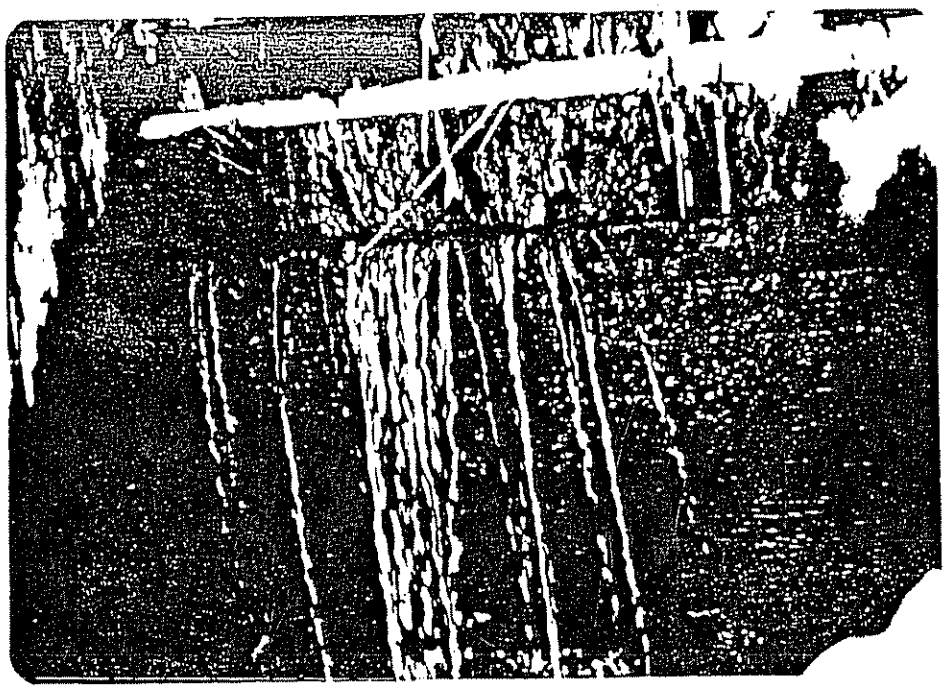


Plate 2-20. July 25, 1979; 4:15 p.m.; South gate leakage.

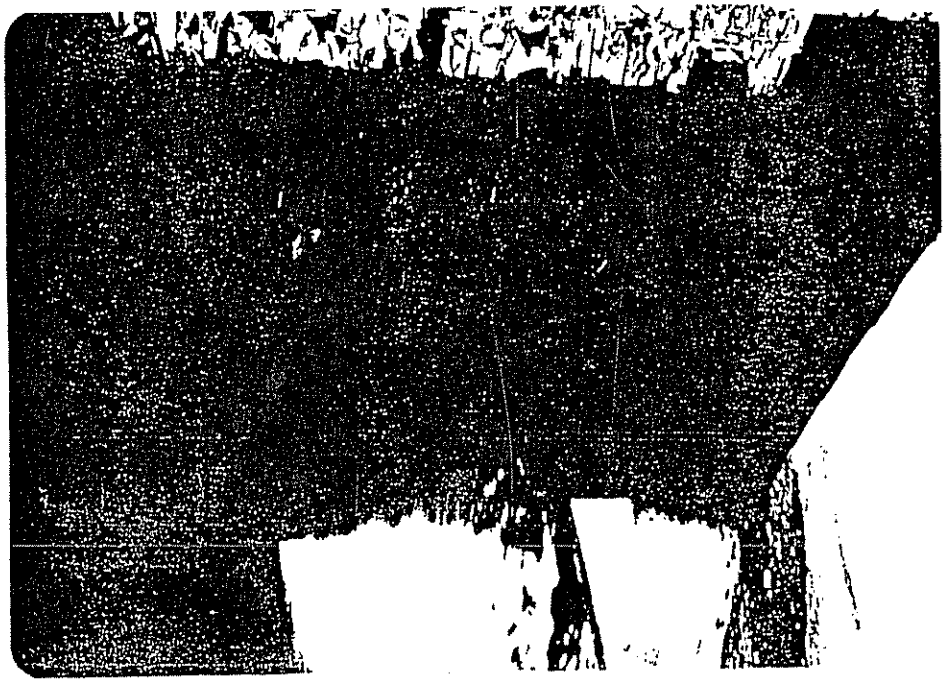


Plate 2-21. Aug. 21, 1979; 11:34 a.m.; South gate, close up.

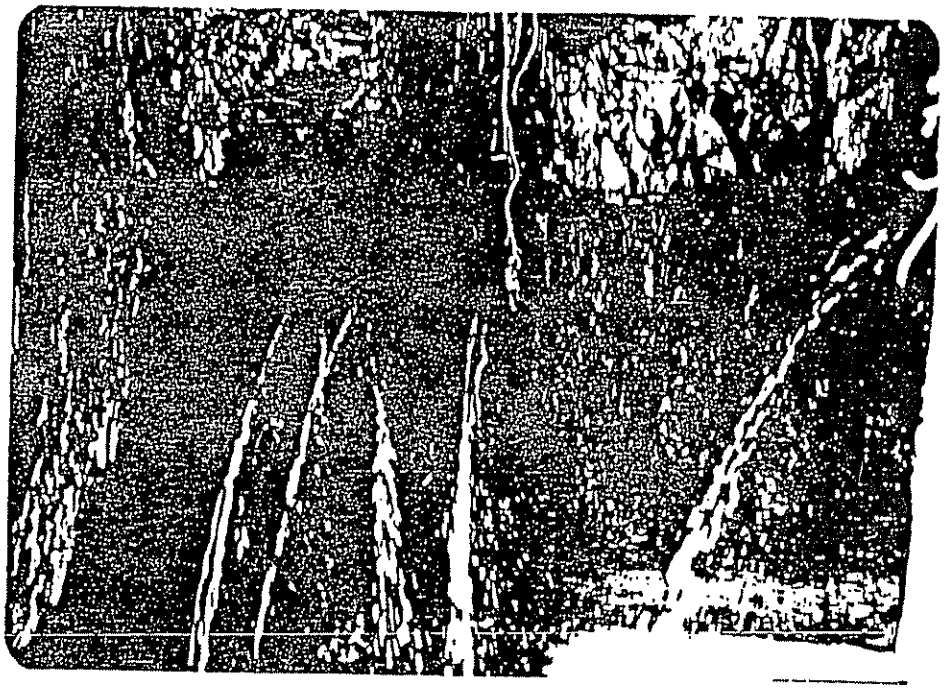


Plate 2-22. Aug. 21, 1979; 11:36 a.m.; North gate leakage.

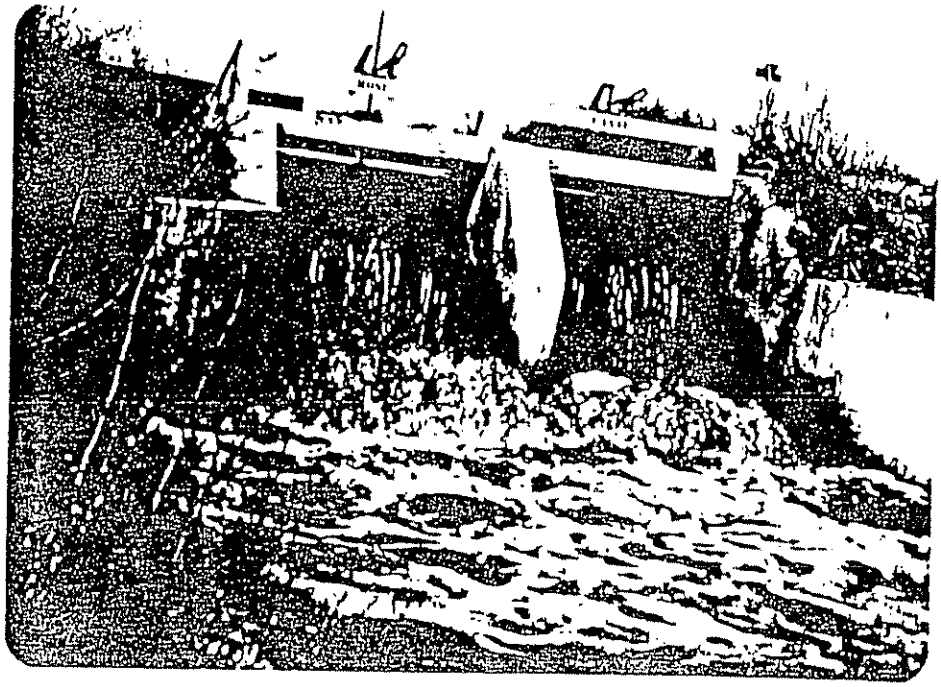


Plate 2-23. Sept. 6, 1979; 11:30 a.m.; Looking west at spill.

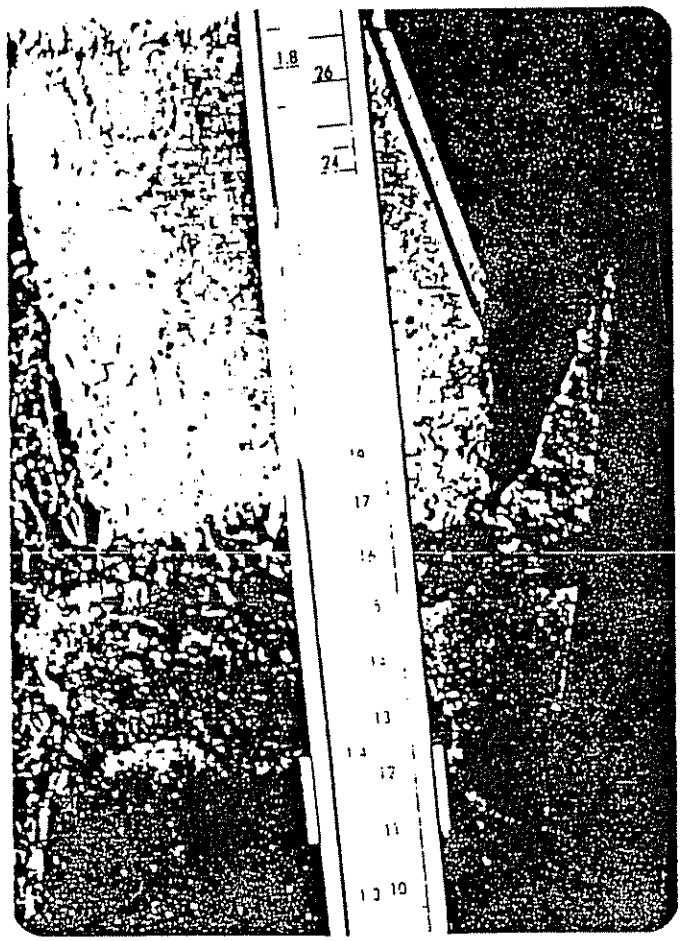


Plate 2-24. Sept. 6, 1979; 11:34 a.m.; South gate weir, reading: 18 (32.4 cfs).

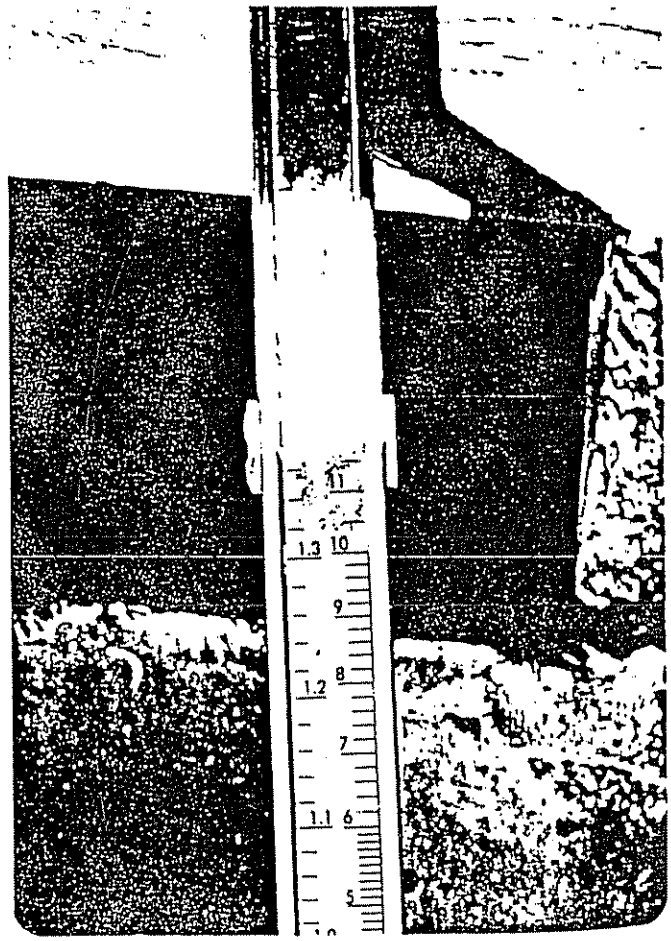
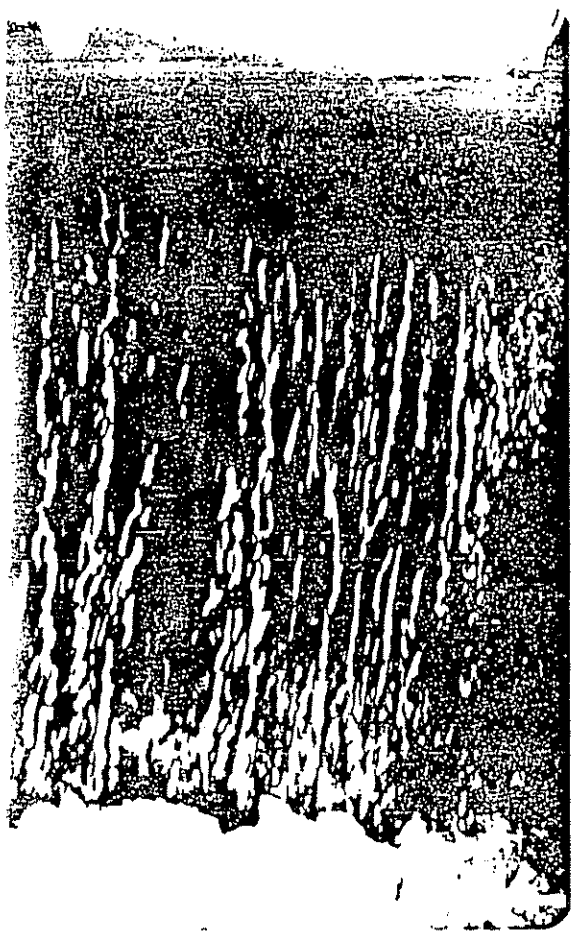


Plate 2-25. Sept. 6, 1979; 11:39 a.m.; North gate weir, reading: 11.5 (20.7 cfs).



2-26. Oct. 25, 1979; 11:49 a.m.; South gate, close up.

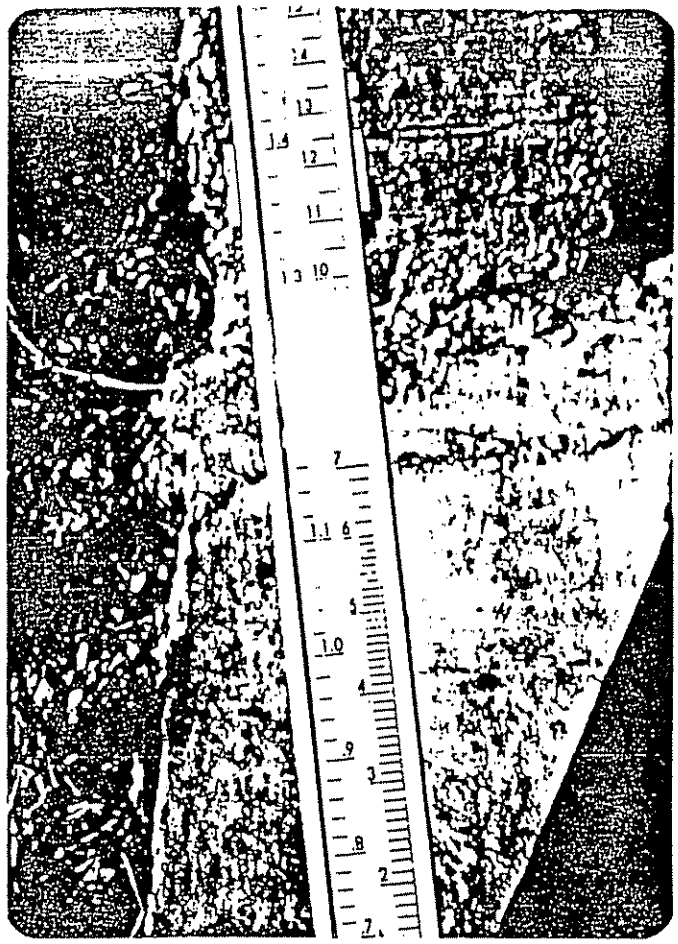
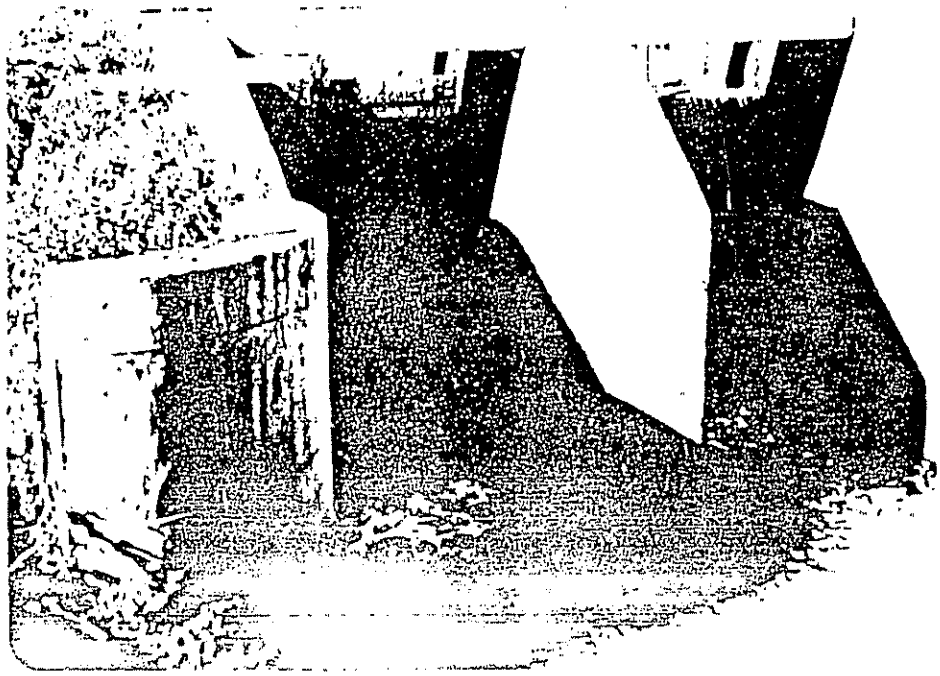


Plate 2-27. Oct. 25, 1979; 11:52 a.m.; South gate weir, reading: 7.2 (12.96 cfs).



ROSE CANAL SPILL

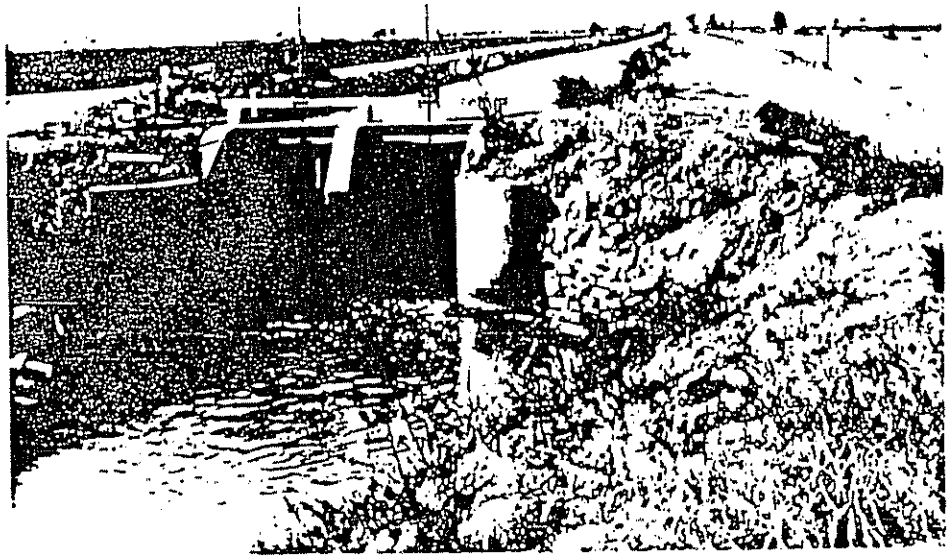


Plate 2-29. Oct. 22, 1980; 9:50 a.m.; Rose canal spill looking west.

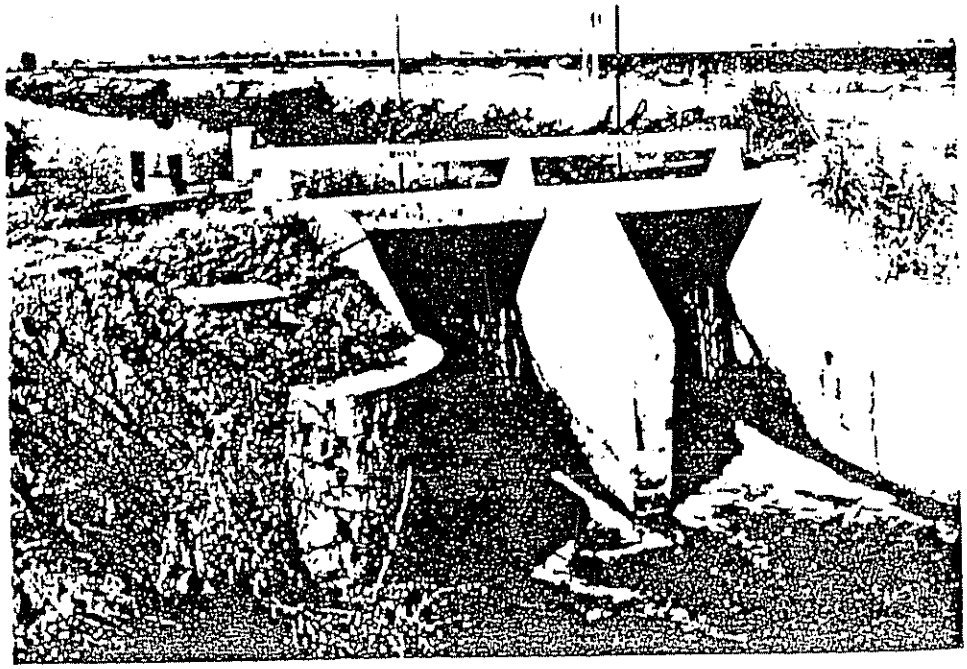


Plate 2-30. Oct. 22, 1980; 10:05 a.m.; Rose canal spill.

ROSE CANAL SPILL

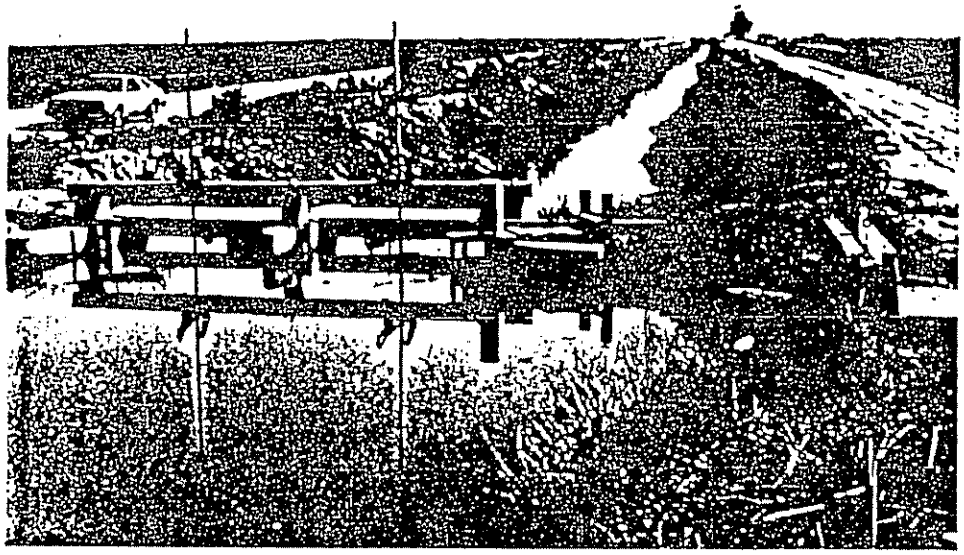


Plate 2-31. Oct. 22, 1980; 10:10 a.m.; Rose canal spill into drainage ditch.

WESTSIDE MAIN CANAL SPILL

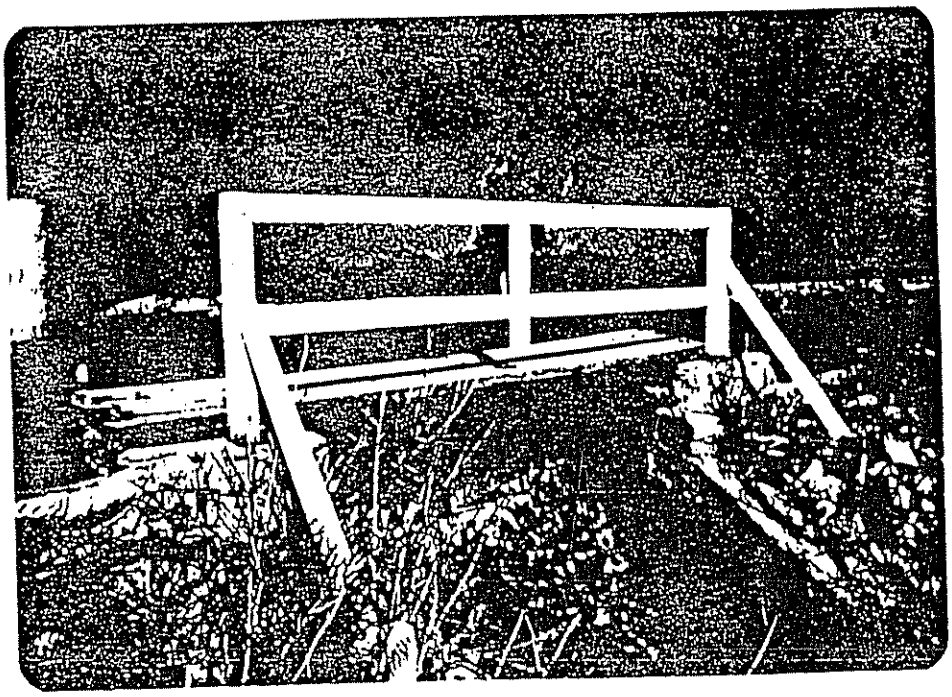


Plate 3-1. May 12, 1978; 4:49 p.m.; Westside Main Canal side spill at the Trifolium extension.

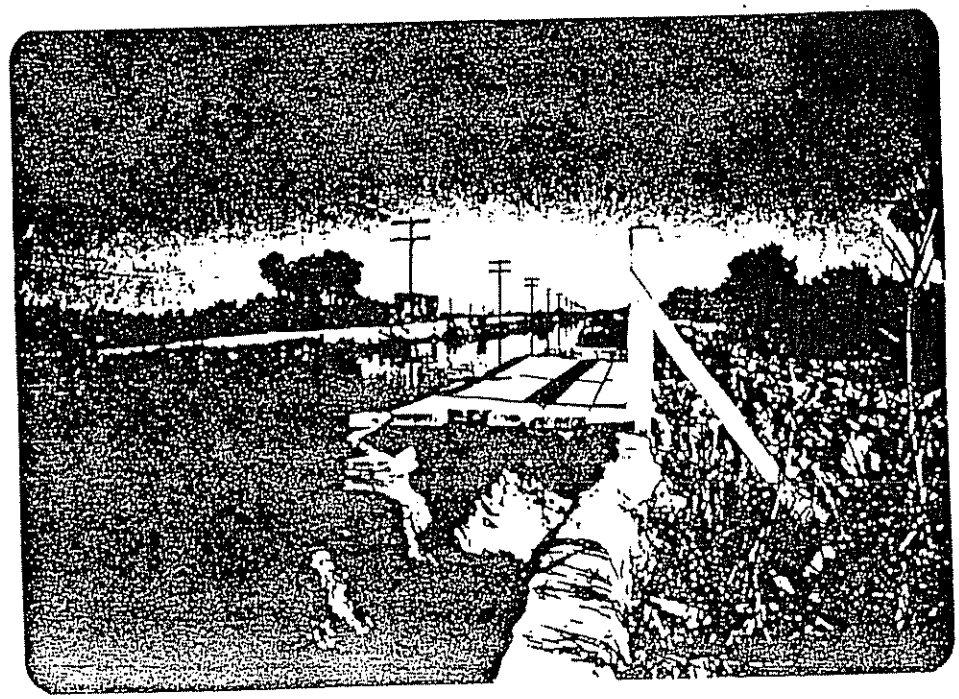
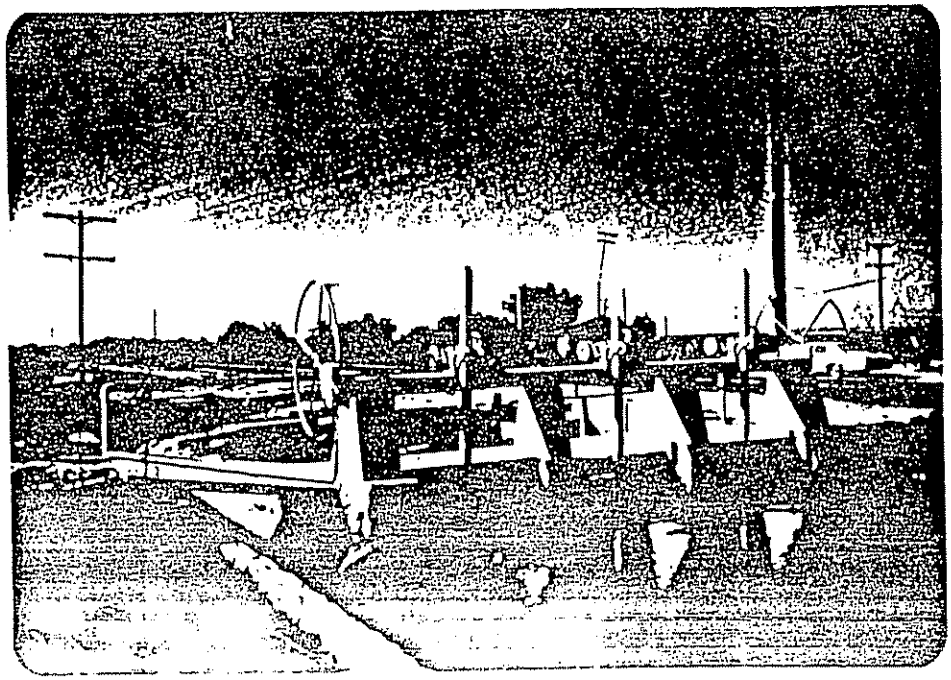


Plate 3-2. May 12, 1978; 4:49 p.m.; Westside Main Canal trough at the Trifolium extension (upstream half).

Plate 3-3. May 12, 1978; 4:50 p.m.; Westside Main Canal side spillway at the Trifolium extension.



Canal trough

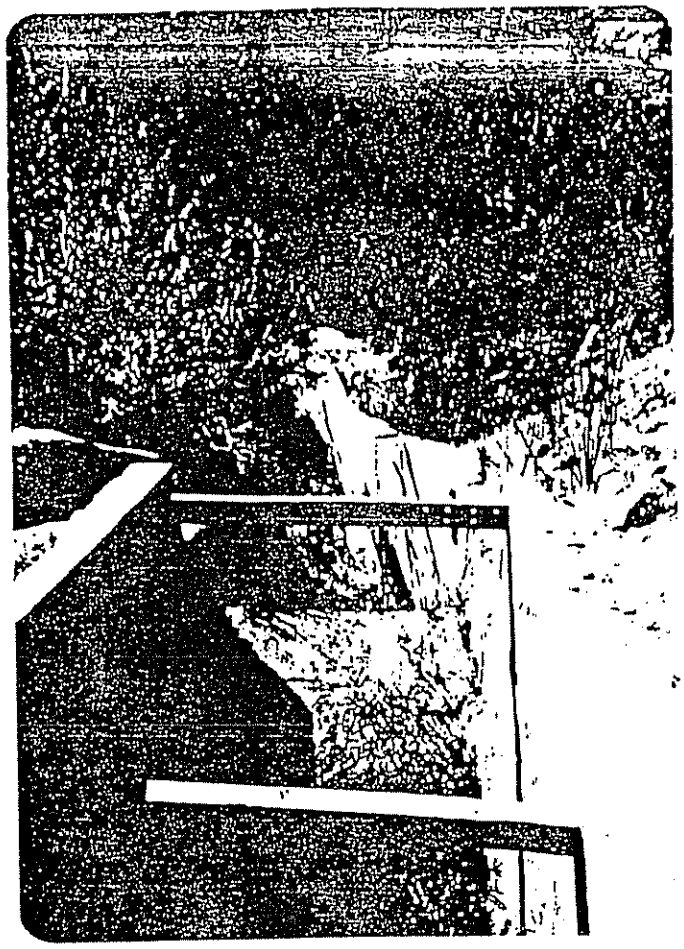
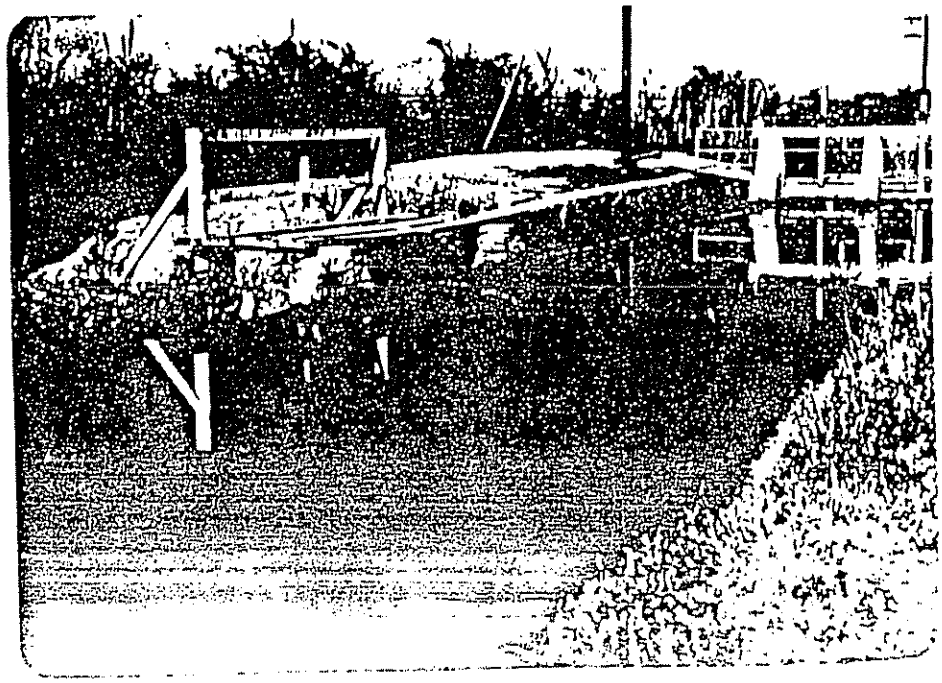


Plate 3-5. May 12, 1978; 4:55 p.m.; Westside Main Canal end spillway at the Trifolium extension.



: 3-7. June 3, 1978; 5:26 p.m.; West-side Main Canal end spillway at the Trifolium extension.

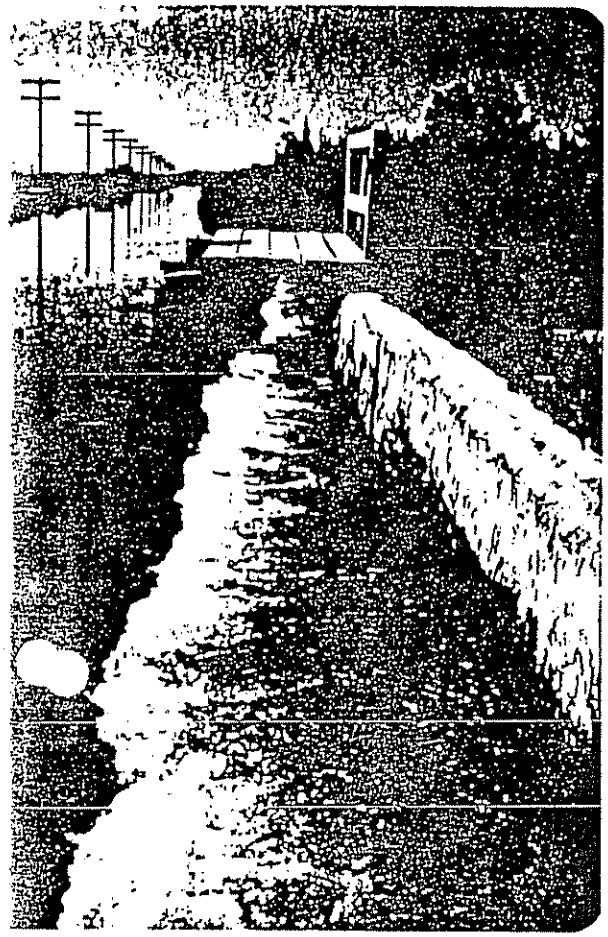
Plate 3-8. June 3, 1978; 5:26 p.m.; West-side Main Canal trough at the Trifolium.

WESTSIDE MAIN CANAL SPILL

Plate 3-10. June 3, 1978; 5:26 p.m.; Westside Main Canal side spillway at the Trifolium extension.

Plate 3-11. July 4, 1979; 10:10 a.m.; Looking north.

WESTSIDE MAIN CANAL SPILL



: 3-12. July 4, 1979; 10:14 a.m.; Side spill.

Plate 3-13. July 4, 1979; 10:12 a.m.; Trough.

WESTSIDE MAIN CANAL SPILL

Plate 3-14. July 4, 1979; 10:16 a.m.; Trough.

Plate 3-15. July 4, 1979; 10:18 a.m.; Si
spill.

3-16. July 25, 1979; 3:28 p.m., Trough.

Plate 3-17. July 25, 1979; 3:30 p.m.; Looking east at the side spill.

Plate 3-18. July 25, 1979; 3:32 p.m.; Looking north down the north spill.

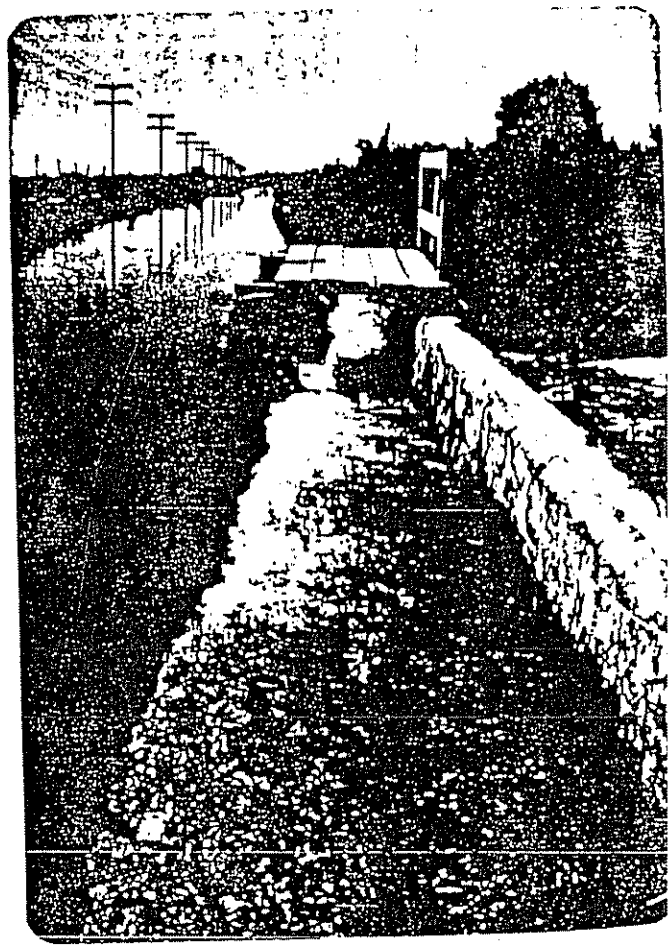
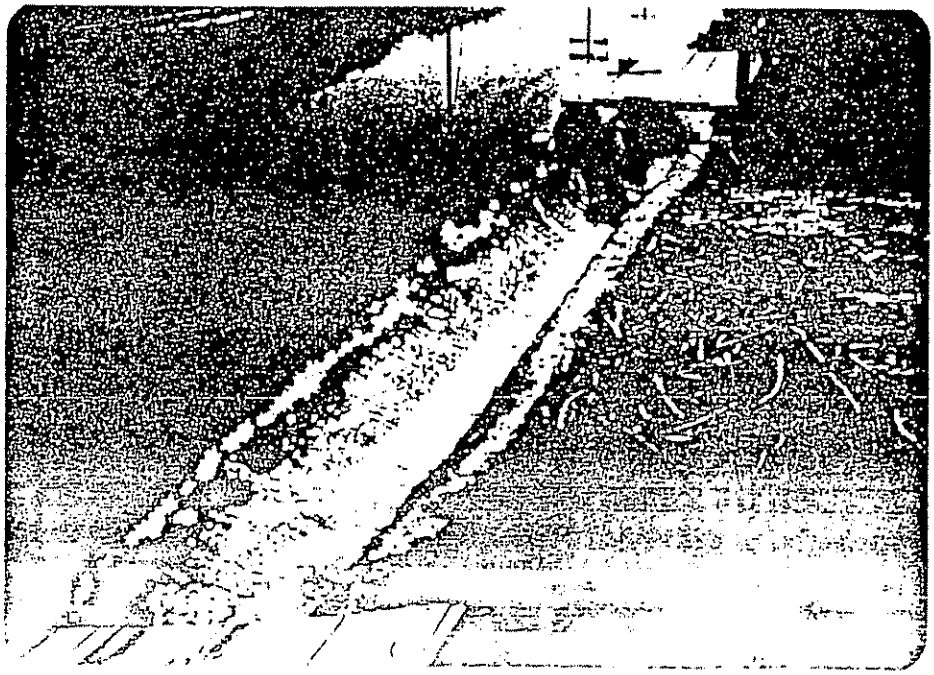


Plate 3-19. Aug. 24, 1979; 10:37 a.m.; Trough.

te 3-20. Aug. 24, 1979; 10:39 a.m.; West down side spill.

Plate 3-21. Aug. 24, 1979; 10:40 a.m.; North down north spill.



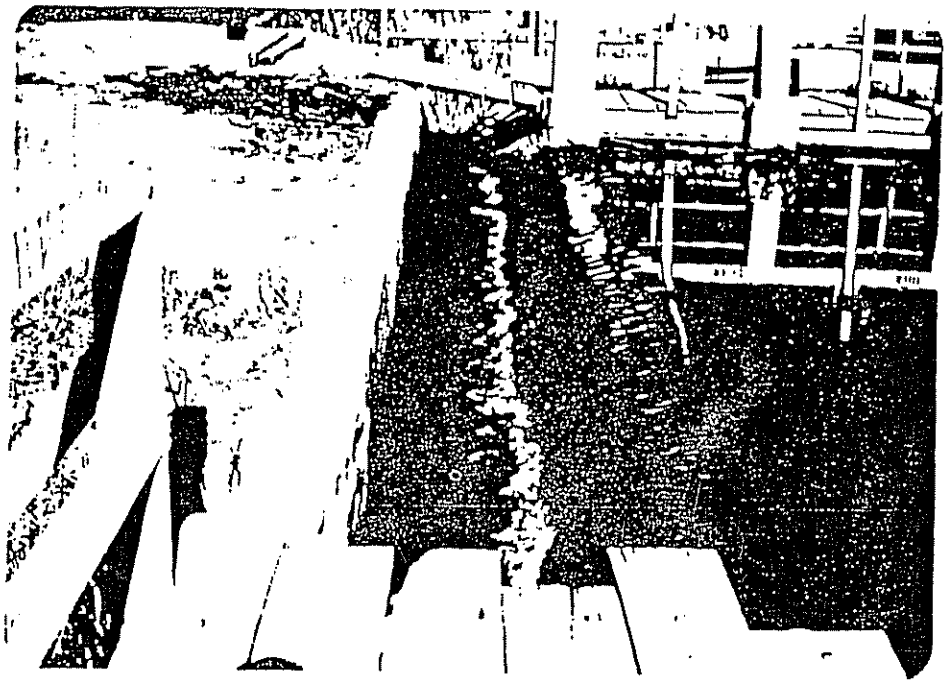


Plate 3-23. Dec. 6, 1979; 9:10 a.m.; Downstream at trough.

Plate 3-24. Dec. 6, 1979; 9:10 a.m.; Sidespill leaking.

25. Oct. 22, 1980; 12:03 p.m.; side spill.

Plate 3-26. Oct. 22, 1980; 12:05 p.m.; leaks in the gate.

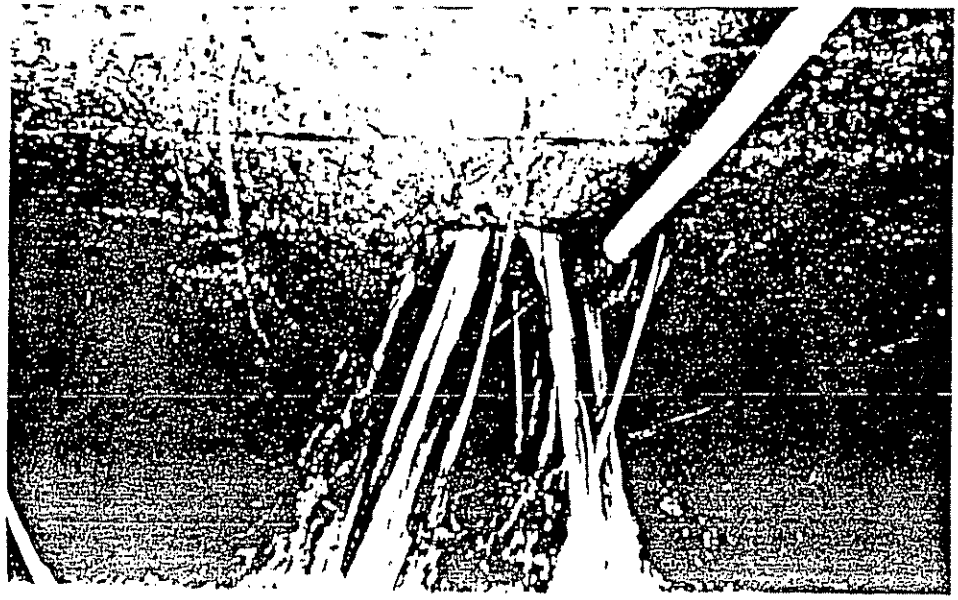


Plate 3-27. Oct. 22, 1980; 12:10 p.m.; leaks in the gate.

WESTSIDE MAIN CANAL SPILL

Plate 3-28. Oct. 22, 1980; 12:14 p.m.; spillage into a drain.

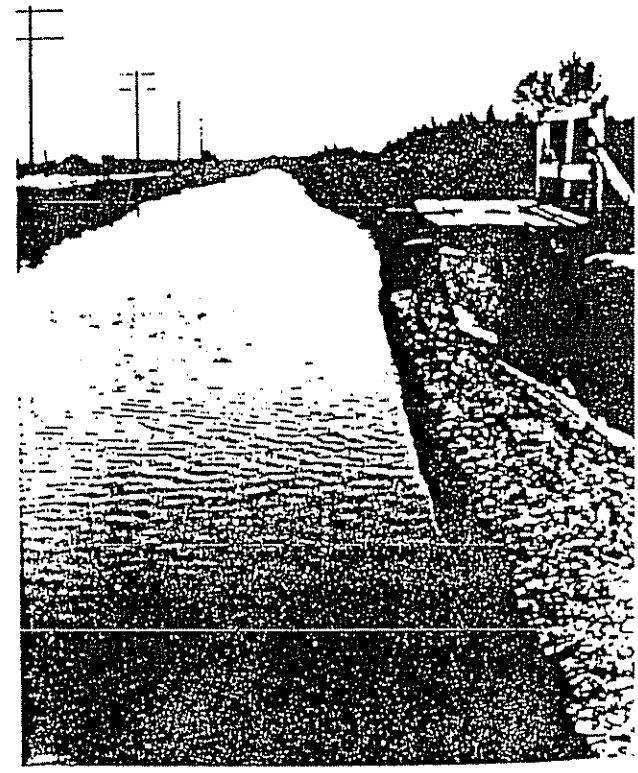
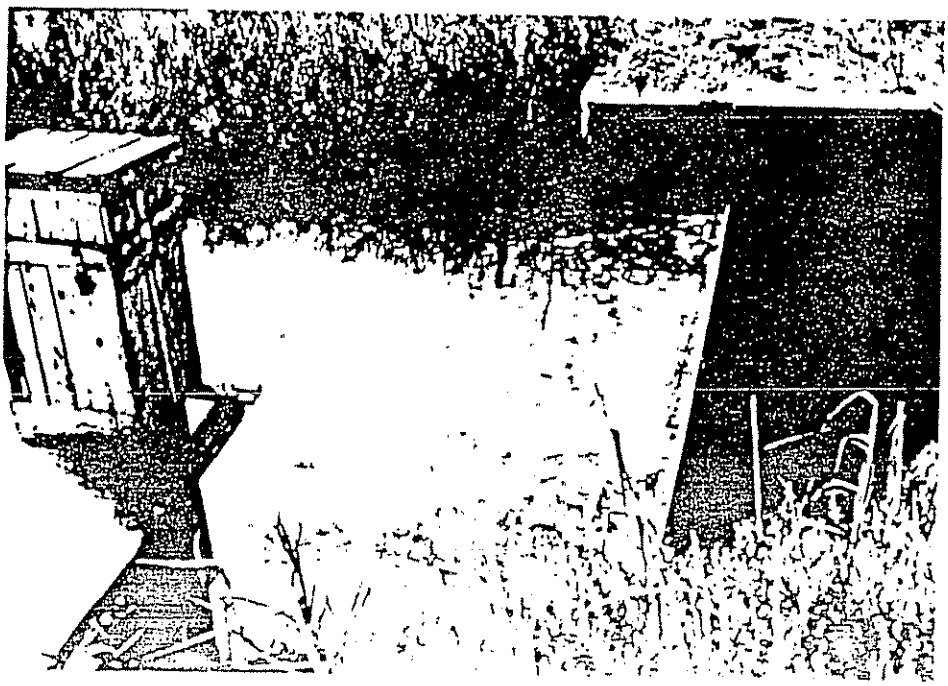


Plate 3-29. Oct. 27, 1980; 11:05 a.m.; spill condition.

Plate 3-30. Oct. 27, 1980; 11:06 a.m.; Leaks at the gate.



WORMWOOD CANAL SPILL

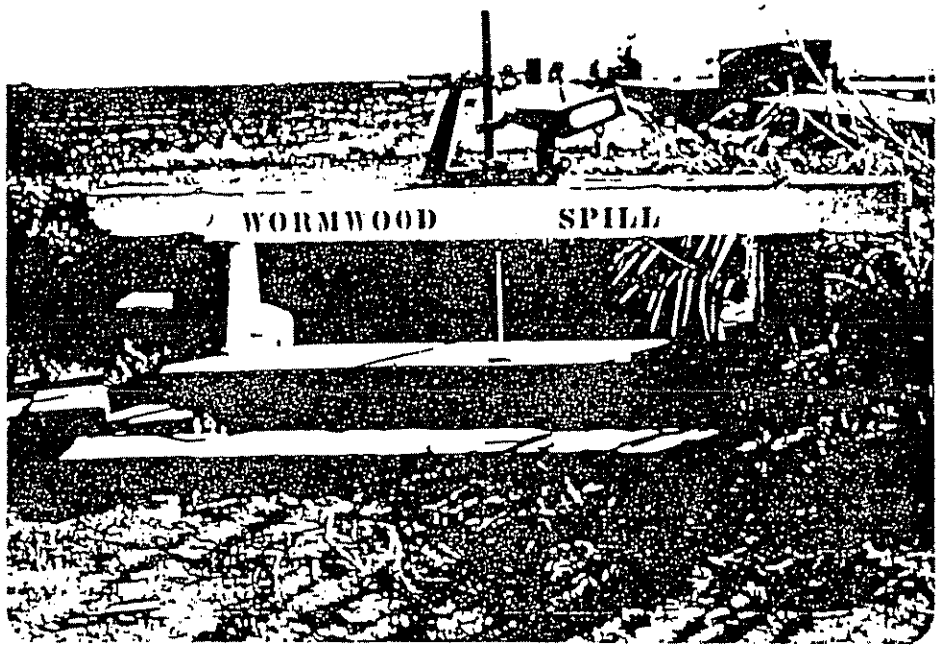


Plate 4-1. Dec. 6, 1979; 2:01 p.m.; Looking south at spill.

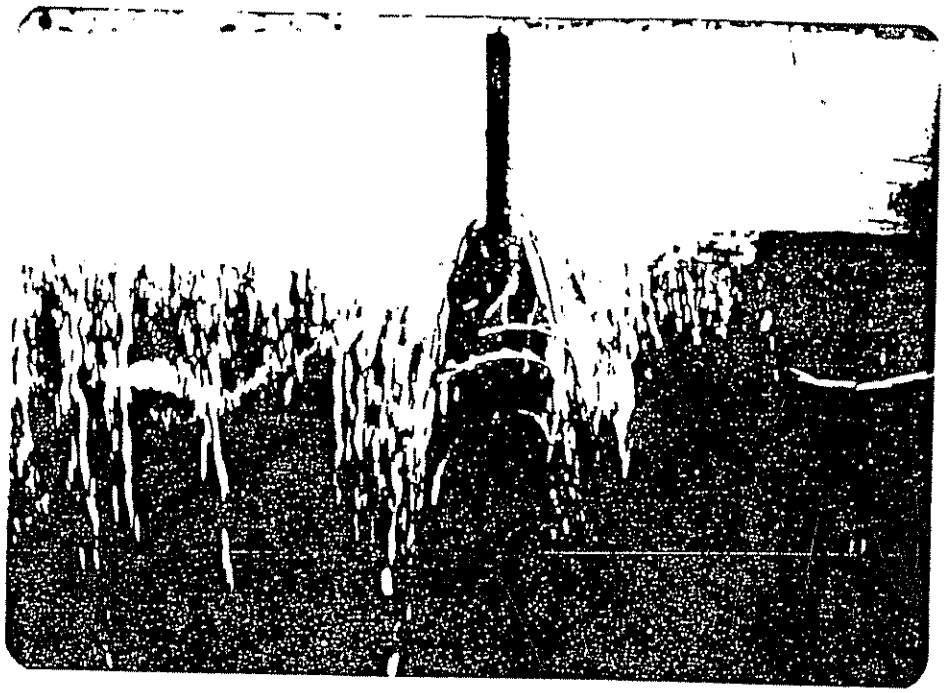


Plate 4-2. July 9, 1979; 2:00 p.m.; Looking south, down into spill.

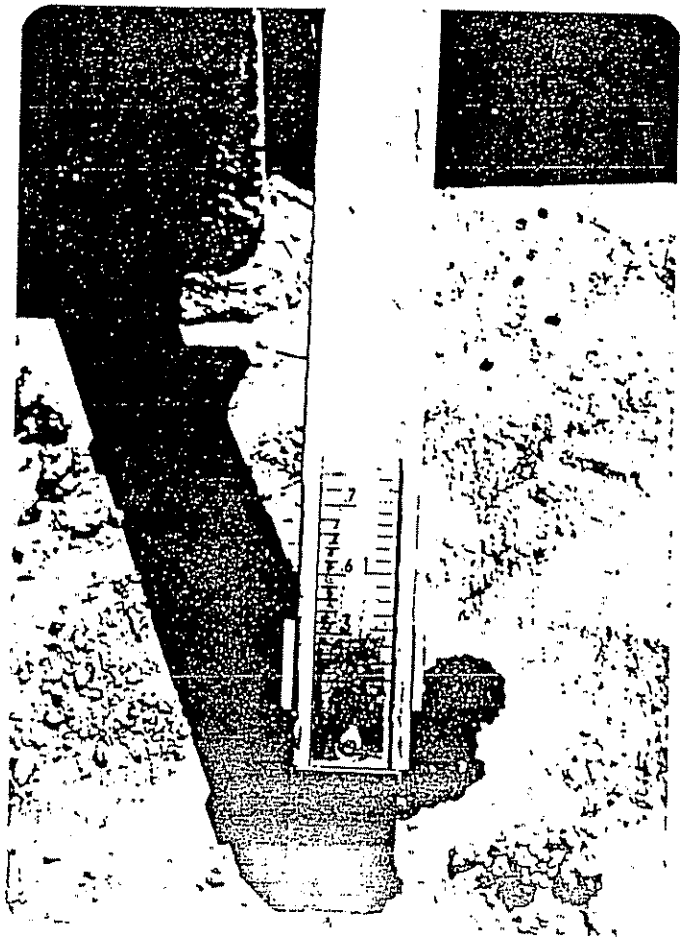


Plate 4-4. Aug. 27, 1979; 8:44 a.m.; Close up.

Plate 5-1. Oct. 28, 1980; 11:45 a.m.; New River at Rack Rd., 4 miles east of inflow to Salton Sea; view east.

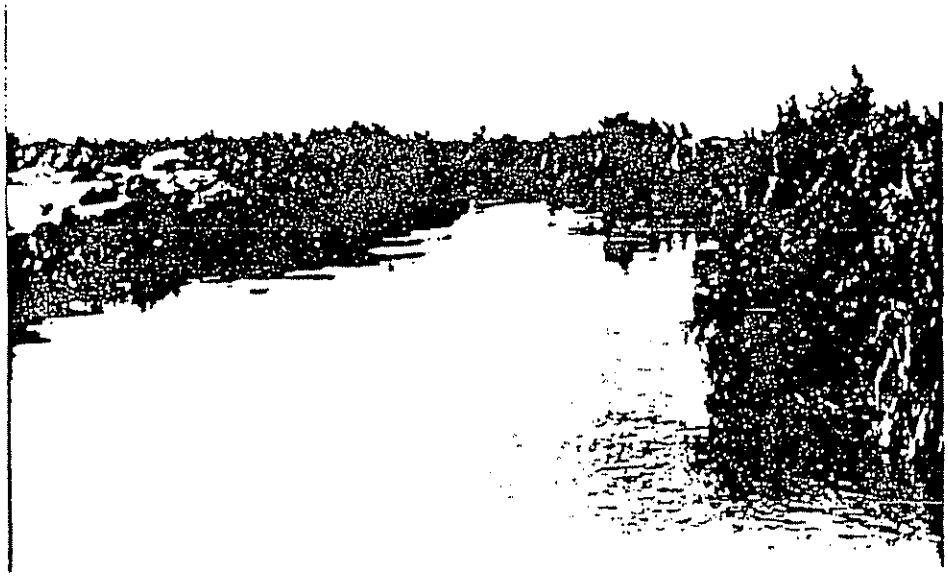


Plate 5-2. Oct. 28, 1980; 11:46 a.m.; New River at Rack Rd., 4 miles east of inflow to Salton Sea; view west.

Plate 6-1. Oct. 28, 1980; 12:25 p.m.; Alamo River at Sinclair Rd., 4 miles southeast of inflow to Salton Sea; view north.

Plate 6-2. Oct. 28, 1980; 12:30 p.m.; Alamo River at Sinclair Rd., 4 miles southeast of inflow to Salton Sea; view south.

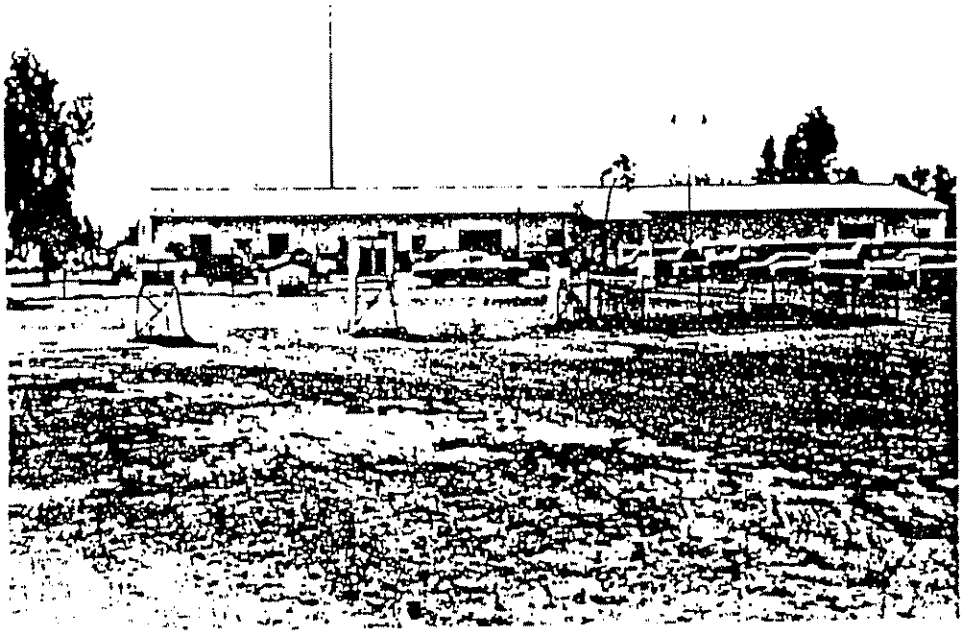


Plate 7-1. Oct. 22, 1980, 9:40 a.m.; Imperial Irrigation District, headquarters climate station.

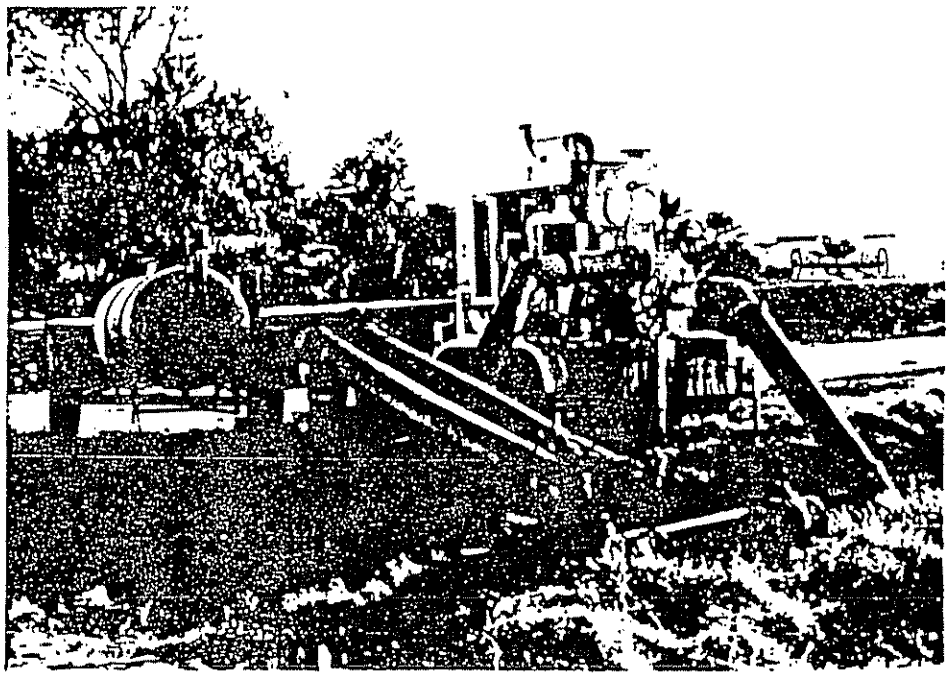


Plate 7-3. Oct. 23, 1980; 4:20 p.m.; Holtville area, diesel pump unit for powering sprinklers.

Plate 7-4. Oct. 23, 1980; 4:20 p.m.; Ash lateral, an example of an unlined irrigation water delivery canal.

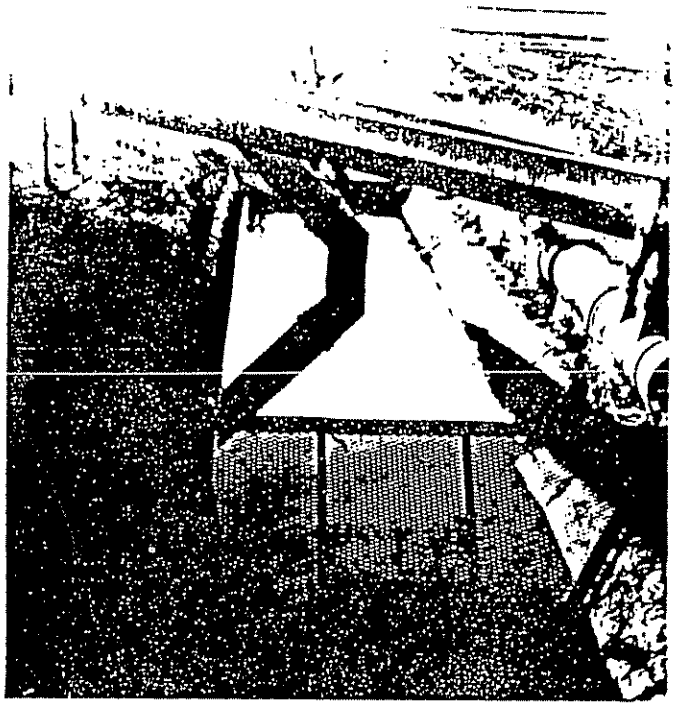


Plate 7-5. Oct. 23, 1980; 4:25 p.m.; Holtville area, Ash lateral. Example of a ponding area for uptake by diesel pump for sprinkler irrigation.

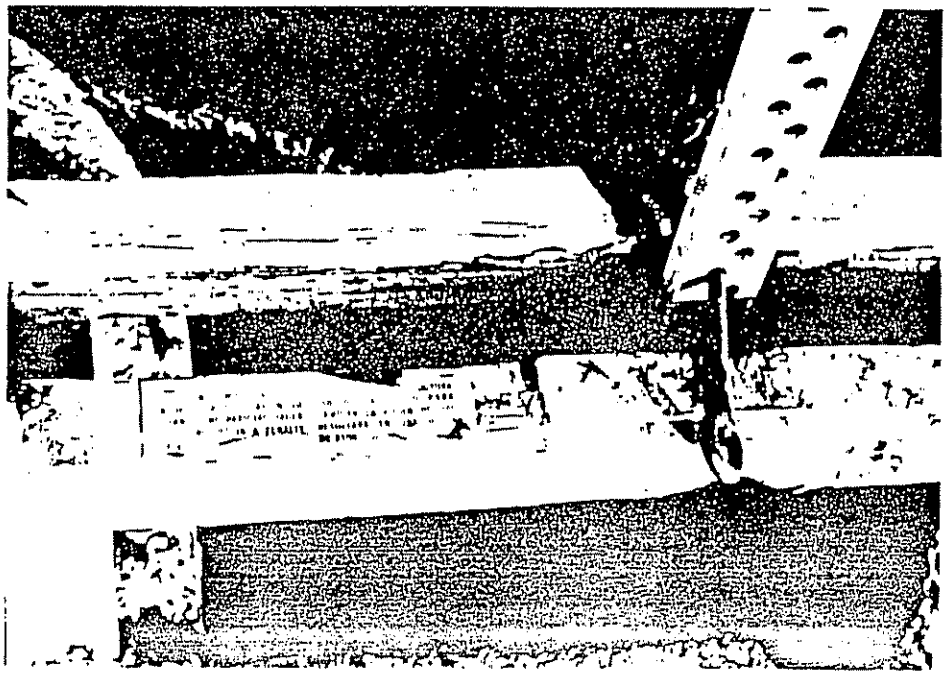


Plate 7-6. Oct. 23, 1980; 4:27 p.m.; Ash lateral. Holtville area. Turnout [illegible]

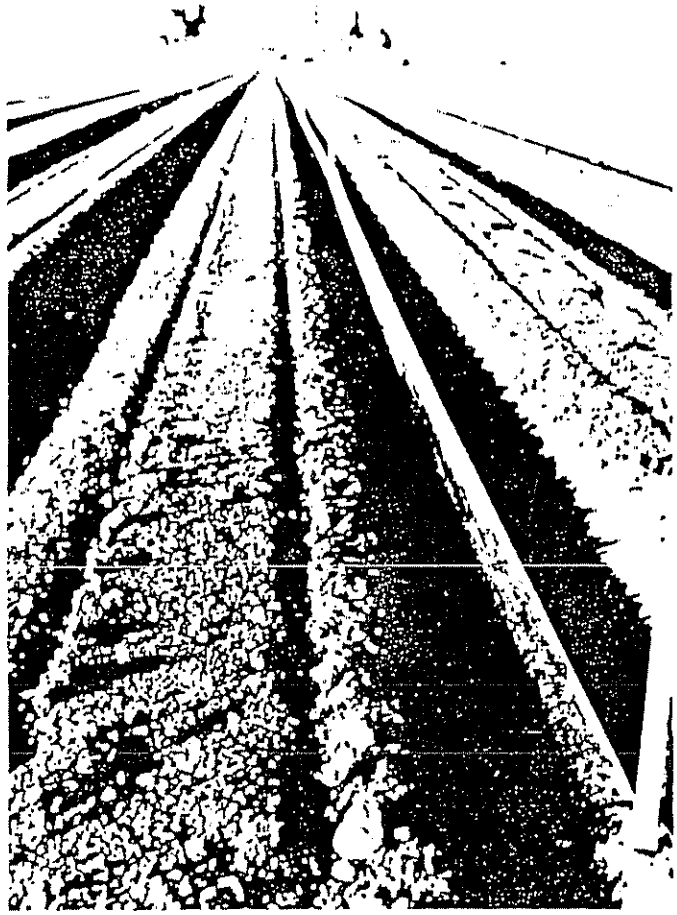
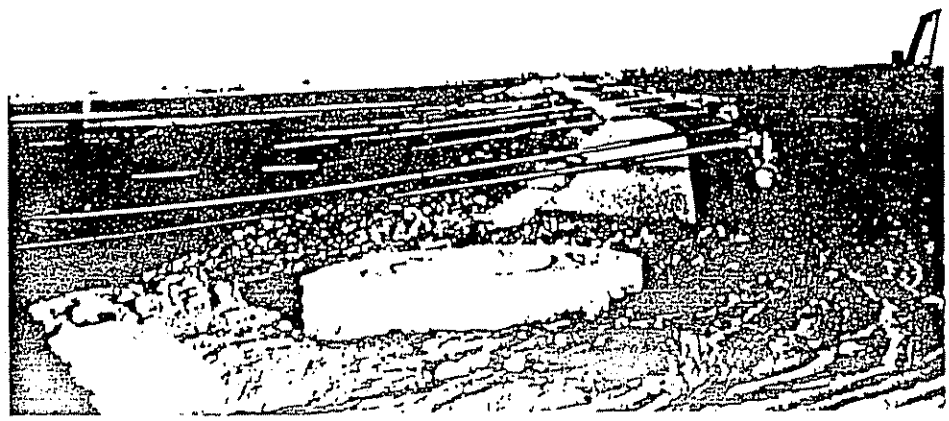


Plate 7-7. Oct. 23, 1980; 4:30 p.m.; Holtville area; sprinkler irrigation in place for lettuce germination.



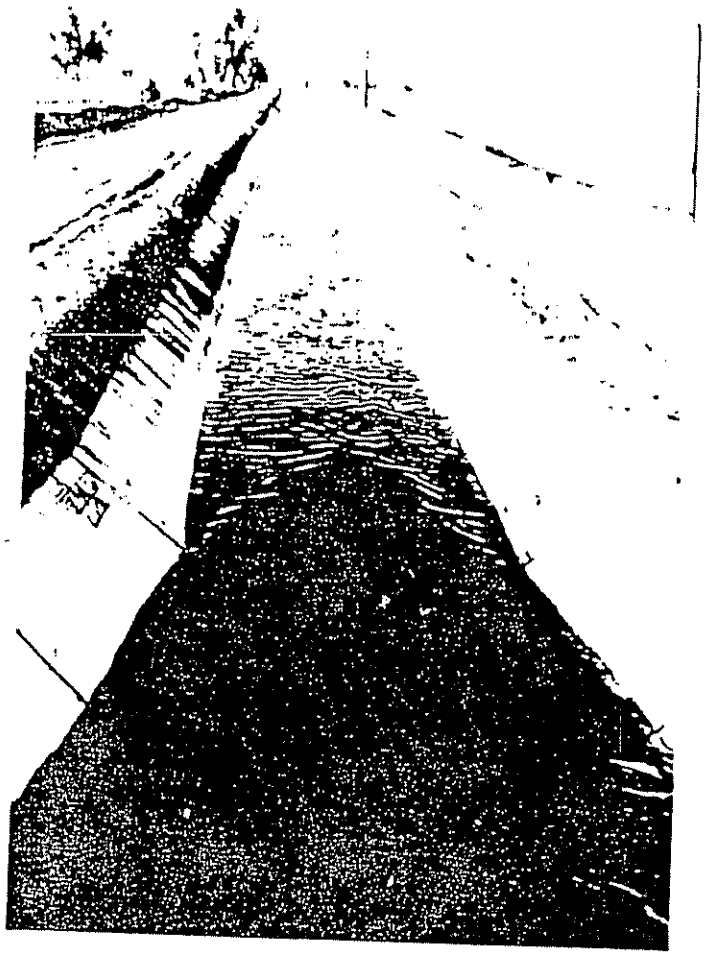


Plate 7-9. Oct. 23, 1980; 4:45 p.m.; Holtville area; an example of a concrete lined irrigation water delivery canal.

...ILY FLOW(cfs)

YR: 1990

...:

*****ROSE CANAL SPILL*****

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
	27.3	3.5	12.2	13.4	1.7	2.6	5.2	4.0	0.0	5.2	22.4	3.5
	15.6	2.4	11.8	10.7	3.6	6.3	10.0	3.2	NR	6.3	15.2	7.2
	11.5	NR	NR	19.2	9.3	4.2	7.6	3.5	0.2	4.5	5.2	2.5
	1.5	NR	NR	27.8	5.0	2.2	2.4	8.3	15.0	8.9	4.7	4.0
	4.0	NR	NR	22.0	6.3	3.7	4.0	4.7	12.2	11.1	7.6	4.5
	0.7	3.7	1.2	28.3	9.6	2.0	2.0	2.6	11.5	3.5	3.5	5.5
	3.3	3.5	NR	0.2	6.6	1.8	6.6	4.2	13.0	6.6	6.6	3.7
	NR	NR	18.8	0.4	6.6	9.3	2.6	7.3	9.6	6.6	5.2	12.3
	NR	0.9	12.2	0.2	4.7	6.3	0.0	5.0	13.4	6.6	6.6	8.8
	NR	1.5	1.7	0.0	7.9	3.5	0.0	4.2	13.4	8.9	10.7	8.5
	NR	4.2	1.8	0.6	1.8	7.6	0.0	0.0	5.5	7.3	NR	1.8
	NR	0.0	1.3	0.0	4.2	2.6	2.2	1.5	NR	16.6	NR	3.2
	NR	0.6	3.5	0.0	5.5	3.7	10.4	13.8	7.6	10.0	NR	5.3
	NR	4.7	1.0	0.0	6.3	4.0	7.3	8.9	9.3	4.5	NR	2.1
	1.6	5.5	0.7	NR	5.0	4.7	2.2	7.9	9.3	4.0	NR	6.6
	1.2	6.3	5.2	2.4	5.2	11.5	5.0	11.5	11.1	11.1	NR	4.2
	4.0	9.3	0.0	6.3	1.3	6.3	3.5	0.0	11.8	7.0	15.8	1.2
	4.3	12.6	0.0	12.6	1.8	0.4	4.5	0.0	10.0	0.0	0.0	3.2
	0.2	9.3	0.0	2.0	6.3	NR	2.6	0.0	9.3	2.6	0.7	6.3
	0.3	5.0	0.0	9.6	7.0	NR	2.2	1.5	31.9	13.4	7.0	2.
	13.8	3.2	0.2	0.0	11.1	NR	0.0	7.0	20.1	7.6	11.1	23.8
	0.0	4.7	3.7	0.0	9.3	NR	0.0	7.3	14.6	13.8	9.6	9.1
	0.0	5.2	5.2	0.0	3.7	NR	0.2	10.4	9.6	18.8	14.2	2.4
	1.2	6.3	NR	0.0	7.9	NR	7.6	12.6	2.2	13.0	9.3	0.7
	3.2	1.8	0.0	0.0	7.9	NR	5.0	10.4	3.7	9.6	2.2	3.7
	7.0	1.7	0.0	0.0	NR	NR	3.5	0.7	8.9	13.4	0.1	5.2
	12.6	2.2	0.0	0.0	NR	NR	5.2	1.7	7.9	17.9	2.4	6.3
	0.0	1.8	0.0	0.5	NR	NR	7.0	1.5	15.0	13.8	7.9	3.5
	5.0	2.6	0.0	0.0	0.2	NR	4.0	1.3	8.9	11.1	6.3	3.1
	11.8		0.0	0.5	5.2	3.0	2.2	3.5	8.9	6.6	7.6	4.1
	6.6		1.7		4.0		2.4	0.6		17.9		21.0
...TAL	300.1	203.3	163.0	310.8	305.5	168.0	232.9	295.7	583.0	571.6	362.8	374.4

...ANNUAL FLOW: 5.3 cfs TOTAL ANNUAL AF: 3873.6

APPENDIX G

LETTERS OF DAVID N. KENNEDY
THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA
JULY 27, 1981
AUGUST 26, 1981

ıe Metropolitan Water District of Southern California

e of the General Manager

August 26, 1981

Mr. Jack J. Coe
Chief, Southern District
Department of Water Resources
P.O. Box 6598
Los Angeles, California 90055

Dear Jack:

Report on Imperial Irrigation District

It was interesting to participate in the panel discussion with you at the CWRA meeting in San Diego concerning your study of irrigation in Imperial Irrigation District. As I stated there, we have been concerned about the part of your investigation which indicates that water salvaged within Imperial Irrigation District may be available for use in the urban areas of Southern California. When such a possibility was raised in your draft report several months ago, it caused a good deal of confusion and speculation in some newspapers. Inasmuch as you indicated the revised report will also raise this issue, I thought it might be helpful to you to set forth in writing the reasons why the use of water salvaged within IID is not a practical possibility for Metropolitan.

You indicated in your statement that the report will suggest 479,000 acre-feet a year of water can be salvaged within IID by improved water management practices. I have discussed your estimate with professional engineers who have lengthy irrigation experience, and there is a strong feeling that your estimate is high, by a factor of perhaps as much as two. If this turns out to be the case, then your speculation about urban use of the salvaged water would, of course, become moot. More importantly, we will all be forced to go through another lengthy and unnecessary process of responding to charges by those who are simply trying to attack the Peripheral Canal with whatever misinformation they can find.

As you are aware, the Bureau of Reclamation is presently conducting a comprehensive investigation of potential water salvage measures within IID. Until that study is complete, which is currently scheduled for 1983, it would seem particularly

B...d Los Angeles Calif. Mailing address: Box 54153 Los Angeles Calif. 90054 Telephone [illegible]

The Metropolitan Water District of Southern California

Office of the General Manager

July 27, 1981

Mr. Jack J. Coe, Chief
Southern District
Department of Water Resources
P.O. Box 6598
Los Angeles, California 90055

Dear Mr. Coe:

Imperial Irrigation District

This is in response to your request of July 21, that I review the statement which you propose to put in a DWR report concerning Imperial Irrigation District.

The statement attributed to me should read as follows:

> "A spokesperson for MWD has stated that, because of the higher priority of Colorado River agricultural contractors within California, and because of other factors cited in this report, MWD does not believe it would be practical to plan on the use of salvaged IID water within its area."

The meeting referred to in the statement was two months ago, and I do not recall the exact words I used; however, the statement in your draft report is both inaccurate and misleading, and has an unnecessarily negative connotation. It is not a case of our lack of interest but, rather, a case of considering all factors.

Thank you for sending me the statement for review.

Sincerely,

David N. Kennedy
Assistant General Manage

DNK/ub

1111 Sunset Boulevard, Los Angeles, Calif. Mailing address: Box 54153, Los Angeles, Calif. 90054 Telephone: (213) 626-4282

inappropriate for the Department to publish estimates which are based, for the most part, on office studies.

Putting aside the question of how much water can be salvaged within IID, there is no disputing the fact that the aggressive water conservation program presently being followed by IID will result in additional water being salvaged. The question then is, what will be done with the salvaged water? It seems to us at Metropolitan there are a number of significant reasons that the salvaged water will not become available for use in the urban area.

(1) We believe any water salvaged within IID will most likely be devoted to irrigation within either IID or Coachella. The first priority will undoubtedly be to maintain lands which are presently being irrigated, when the Central Arizona Project begins operation and California's entitlement to Colorado River water is reduced. When you consider that the agricultural districts within California are presently using approximately 200,000 acre-feet a year of Colorado River water more than their firm rights (after accounting for the recent lining of the Coachella Canal), it is apparent that those agencies will have to bring about some reduction in their total water use when California is cut back to 4.4 million acre-feet in 1985. While there has been much public discussion of the fact that Metropolitan will have to reduce its use, there has been relatively little recognition that the agricultural agencies will also have to reduce their use. It seems clear that the first 200,000 acre-feet of water salvaged by improved water management will be devoted to sustaining existing agriculture.

(2) A second consideration relates to lands within the District that are poorly drained. Not all of the irrigated lands within IID have tile drainage at present; these lands are either inadequately leached or they lie fallow in some years. Over time, the owners of these lands will probably put in tile drain systems. As that occurs, they will be planted more frequently and additional water will be required for leaching.

(3) If the Colorado River salinity control program is not completely successful, the salinity of Colorado River water will continue to rise and additional leaching water will be required throughout the IID. If you haven't already read it,

I recommend Art Pillsbury's recent article in the Scientific American, entitled "The Salinity of Rivers."

(4) Not all of the irrigable lands within IID and Coachella are presently irrigated. Both districts have substantial lands that farmers would like to irrigate but which have been denied water because it could not be assured on a long-term basis. If salvaged water becomes available on a firm basis, there will be great pressure from land owners within those districts to use the water to develop new lands.

(5) A final consideration relates to the annual variation in water use within IID. The current use is not the highest of record. The water use each year varies with crops planted, climatic conditions, and other factors. The District will have to make allowances and leave some flexibility for this variation in planning its future water operations.

In summary, we believe the above reasons clearly demonstrate that the Colorado River water rights available to IID and Coachella are needed by them to meet their own needs. We see no practical way in which Metropolitan can acquire any permanent rights to water salvaged within IID, and it would be misleading for the Department to put out a report which raises this possibility as though it had real credibility. I can appreciate that you are under some pressure to finalize your report, but I hope you will take the additional time required to seriously address the concerns expressed in this letter.

Sincerely,

David N. Kennedy
Assistant General Manager

DNK/ub

cc: Mr. Lowell O. Weeks
General Manager-Chief Engineer
Coachella Valley Water District
P.O. Box 1058
Coachella, CA 92236

cc: Mr. Donald A. Twogood
General Manager
Imperial Irrigation District
P.O. Box 937
Imperial, CA 92251

Dr. Gerald H. Meral
Deputy Director
Department of Water Resources

Mr. Charles R. Shoemaker
Assistant Director
Department of Water Resources

Mr. Myron B. Holburt
Chief Engineer
Colorado River Board

APPENDIX H

NEWS RELEASE, CALIFORNIA DEPARTMENT OF WATER RESOURCES, APRIL 16, 1981

CALIFORNIA DEPARTMENT OF WATER RESOURCES
Resources Building, Room 1115-16
16 Ninth Street
Sacramento, CA 95814
Phone: (916) 445-4501

NEWS RELEASE
April 16, 1981

SACRAMENTO - The Department of Water Resources said today that the Peripheral Canal will be needed even if the Imperial Irrigation District adopts water conservation measures recommended in a report prepared by the Department's Southern District office, contrary to the story reported in the Sacramento Bee, Thursday, April 16, 1981.

"The Peripheral Canal is needed to correct existing environmental problems in the Sacramento-San Joaquin Delta and to improve Delta water quality while restoring the Delta's fishery even if no additional amounts of water are diverted from the Delta", said Director of Water Resources Ronald B. Robie today. "These are serious problems which the Peripheral Canal can correct and which are not directly related to water conservation in the Imperial Valley."

Robie said that water conservation has always been a principal theme of his Department's program. In May 1976, the Department's Bulletin 198, "Water Conservation in California", reported that up to 400,000 acre-feet of Imperial Valley agricultural water could be saved by implementing a number of conservation practices which would increase the effectiveness of irrigation water use. The report pointed out that the low cost of federal water does not encourage efficient use in the Imperial Valley. The overall basin efficiency of 66 percent for Imperial is substantially below the efficiencies obtained in the San Joaquin ley, for example, 96 percent in the Tulare Lake area. Any water conserved by the Imperial farmers would belong to them.

The Southern District of the Department produced a report following an investigation of allegations that there is a misuse of water by the Imperial Irrigation District. The report is preliminary and subject to revision prior to being forwarded to the State Water Resources Control Board.

By the year 2000, the present dependable water supply of the existing facilities of the State Water Project will decline from 2.3 million acre-feet per year to about 1.7 million acre-feet per year as a result of increased water use in Northern California. During the same 20 year period, the demand for State Water Project contracted water will grow to about 3.2 million acre-feet, after allowing for slower population growth and water conservation and waste water reclamation programs which are included in SB 200. The Peripheral Canal will provide 700,000 acre-feet of water at a cost of $100 per acre-foot. The attached chart shows the estimated supply and demand for the State Water Project. The Department's program to meet these needs is contained in Senate Bill 200 and includes (in addition to the Peripheral Canal) the following facilities and amounts of new water:

1. Ground water storage - 400,000 acre-feet (cost per acre-foot ($60).
2. Thomes-Newville Reservoir - 220,000 acre-feet (cost per acre-foot ($245).

3. Los Vaqueros Reservoir - 205,000 acre-feet (cost per acre-foot ($420).

The State Water Project would have no right to water conserved by the Imperial Irrigation District. If water could be made available to the area served by State Water Project contractors, it could change the date of construction of new storage facilities.

Robie said that after the comments are received on the draft Imperial Irrigation District report, it will be finalized and submitted to the State Water Resources Control Board (SWRCB) which, under the law and administrative regulations, must decide whether to take any action regarding the alleged misuse of water. The final report is scheduled to go to the SWRCB by June.

ESTIMATED SUPPLY AND DEMAND FOR STATE WATER PROJECT